

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

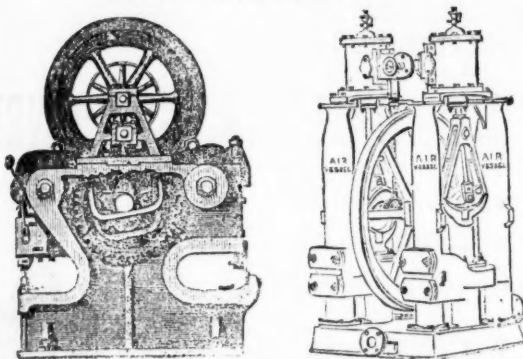
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No. 2045.—VOL. XLIV.

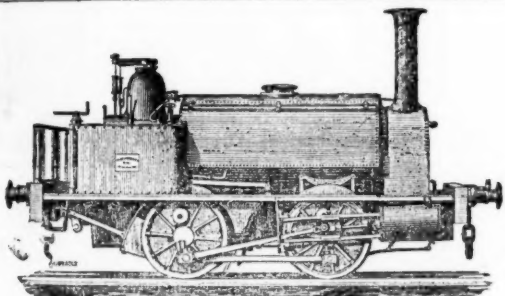
LONDON, SATURDAY, OCTOBER 31, 1874.

PRICE (WITH THE JOURNAL) SIXPENCE.
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JOHN CAMERON'S
SPECIALITIES ARE ALL SIZES OF
**Steam Pumps, Shipbuilders' Tools,
BAR SHEARS.**
ESTABLISHED 1852.



OLDFIELD ROAD IRON WORKS,
SALFORD, MANCHESTER.



TANK LOCOMOTIVES,
FOR SALE OR HIRE.
HENRY HUGHES AND CO.
LOUGHBOROUGH.

BICKFORD'S PATENT SAFETY FUSE,
FOR CONVEYING CHARGE IN BLASTING ROCKS, &c.
Obtained the PRIZE MEDALS at the "ROYAL EXHIBITION" of 1851; at the "INTERNATIONAL EXHIBITION" of 1862, in London; at the "IMPERIAL EXHIBITION," held in Paris, in 1865; at the "INTERNATIONAL EXHIBITION," in Dublin, 1865; at the "UNIVERSAL EXHIBITION," in Paris, 1867; at the "GREAT INDUSTRIAL EXHIBITION," at Altona, in 1869; and at the "UNIVERSAL EXHIBITION," Vienna, in 1873.

BICKFORD, SMITH, AND CO.,
of TUCKINGMILL, CORNWALL; ADELPHI BANK CHAMBERS, SOUTH JOHN-STREET, LIVERPOOL; and 85, GRACECHURCH-STREET, LONDON, E.C., MANUFACTURERS AND ORIGINAL PATENTEES OF SAFETY-FUSE, having been informed that the name of their firm has been attached to fuse not of their manufacture, beg to call the attention of the trade and public to the following announcement:—
EVERY COIL OF FUSE MANUFACTURED by them has TWO SEPARATE THREADS PASSING THROUGH THE COLUMN OF GUNPOWDER, and BICKFORD, SMITH, AND CO. CLAIM TWO SUCH SEPARATE THREADS as THEIR TRADE MARK.

For Excellence and Practical Success of Engines
Represented by Model exhibited by this Firm.

HARVEY AND CO.,
ENGINEERS AND GENERAL MERCHANTS,
HAYLE, CORNWALL,
HAYLE FOUNDRY WHARF, NINE ELMS, LONDON,
AND 120, GRESHAM HOUSE, E.C.

MANUFACTURERS OF
PUMPING AND OTHER LAND ENGINES AND MARINE STEAM ENGINES
the largest kind in use, SUGAR MACHINERY, MILLWORK, MINING
MACHINERY, and MACHINERY IN GENERAL.
SHIPBUILDERS IN WOOD AND IRON.

SECONDHAND MINING MACHINERY FOR SALE.
In First-Rate Condition, at Moderate Prices.
PUMPING ENGINES; WINDING ENGINES; STAMPING ENGINES
STEAM CAPTAINS; and CRUSHERS of various sizes. BOILERS, PIT
WORK of all descriptions, and all kinds of MATERIALS required for
MINING PURPOSES.

THE PATENT PNEUMATIC STAMPS
May be SEEN AT WORK at HAYLE FOUNDRY WHARF, NINE ELMS,
by previous application at either of the above addresses.

BENNETTS' SAFETY FUSE WORKS,
ROSKEAR, CAMBORNE, CORNWALL.

BLASTING FUSE FOR MINING AND ENGINEERING
PURPOSES.

Suitable for wet or dry ground, and effective in tropical or Polar climates.
W. BENNETTS, having had many years experience as chief engineer with
Messrs. Bickford, Smith, and Co., is now enabled to offer Fuse of every variety of
Price Lists and Sample Cards may be had on application at the above address.
LONDON OFFICE.—H. HUGHES, Esq., 95, GRACECHURCH STREET.



PARIS. ORDER OF THE CROWN OF PRUSSIA. FALMOUTH.

McKEAN'S ROCK DRILL,

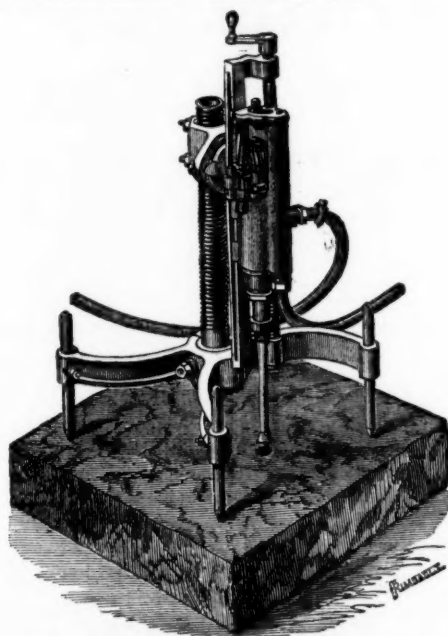
ADAPTED TO EVERY CLASS OF ROCK BORING.

SIXTY MACHINES

FURNISHED FOR THE

ST. GOTHARD TUNNEL OF THE ALPS.

IN USE AT THE ST. JOHN DEL REY MINES, RIO TINTO MINES, FIUME HARBOUR WORKS, ALEXANDRIA HARBOUR WORKS, AND IN VARIOUS TUNNELS, MINING AND QUARRY WORKS, DEEPENING RIVER BEDS, STONE-CUTTING AND CONTRACTORS' WORK OF VARIOUS KINDS, WELL-BORING, &c.



MANUFACTURED FOR McKEAN AND CO. BY
MESSRS. P. AND W. MACLELLAN, "CLUTHA IRONWORKS,"
GLASGOW;
MESSRS. VARRALL, ELWELL, AND MIDDLETON, AND MESSRS.
SAUTTER, LEMONNIER, AND CO., PARIS;
AND E. REMINGTON AND SONS, NEW YORK.

PORTABLE BOILERS, AIR COMPRESSORS, BORING STEEL,
IRON, AND FLEXIBLE TUBING OF SUPERIOR
QUALITIES AND SPECIAL ADAPTATIONS.

McKEAN AND CO.,
ENGINEERS.

OFFICES.

32, LOMBARD STREET, LONDON, E.C.; and
5, RUE SCRIBE, PARIS.

ST. GOTHARD TUNNEL.

Extract from Official Report of M. FAVRE, the contractor.
"By the end of this (June, 1874) month a sufficient number of the
improved McKean Boring Machines, at present only partially em-
ployed, will be at disposal, and they will then be exclusively used
in the works of the Tunnel."

ENTREPRISE GENERALE DE CHEMINS DE FER ET DE
TRAVAUX PUBLICS, PARIS.

"We hereby certify that we are employing in our works, at the
port of Fiume, Austria, several of McKean and Co.'s Rock Drills,
and that we are highly pleased with the results obtained."

Paris, 24th April,
L'Administrateur Délégué.

(Signed)

A. CHAMPOUILLON.

With each of four No. 3 Rock Drills, furnished successively to
the "Entreprise Générale," for the work above mentioned, we have
furnished the tools for boring to 30 ft. in depth.—McK. and Co.

CONDENSATION OF SMOKE & GASES.

HESLOP, WILSON, AND BUDDEN,
NEWCASTLE-UPON-TYNE.

This PATENT APPARATUS is EXCEEDINGLY SIMPLE and INEXPENSIVE IN CONSTRUCTION, and is so arranged as may seem best for adapting the substances to be operated upon.

AFFORDS TO MANUFACTURERS AND OTHERS PERFECT SAFETY UNDER THE SMOKE AND GASES ACTS.

More effective than condensing towers.
Large chimneys can be done away with. Succeeds thoroughly in condensing ammonia.

UTILISES ALL EMISSIONS.
OF GREAT VALUE IN SMELTING WORKS.

The Machine can be seen at work at—

JOHNSON AND HOBBS,
No. 11, CROSS STREET, MANCHESTER,
Of whom also all particulars can be had.

**ASHWORTH'S IMPROVED
STEAM RAM PUMPS.**

AWARDED
**First Prize
MEDALS**

AT
MIDDLETON,
WORSLEY,
OLDHAM,

AND
MANCHESTER AND
LIVERPOOL SHOWS,
September, 1874.

For Neatness,
Simplicity,
and Efficiency.

Useful to Mill-owners,
Colliery Proprietors,
Chemical Works,
Paper Works, &c.

Single & Double
RAM PUMPS,
of all sizes.

Full particulars on
application.

ASHLEY LANE, MANCHESTER.

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**PHOSPHOR BRONZE
COMPANY (LIMITED).**

OFFICES:

110, CANNON STREET, E.C.

FOUNDRY:

115, BLACKFRIARS ROAD, S.E.

INGOTS, Nos. I and II, suitable for Pumps, Pinions,
Ornamental Castings, &c. £130 per ton
Nos. VI and VII, suitable for Valves, Plungers,
Bushes and Bearings, Fans, &c. £145 per ton
Special Phosphor Bronze Bearing Metal £120 per ton
CASTINGS, Wire Ropes, Tuyeres, &c., of all descriptions
executed at the shortest notice.



UNIVERSAL SUCCESS OF
**HONEYMAN'S PATENT BOILER
Anti-Incrustation Composition.**

AMERICAN AND CONTINENTAL STEAM USERS, as well as
ENGINEERS in the UNITED KINGDOM generally, report the above
Composition to be the BEST and CHEAPEST SCALE REMOVER and PRE-
VENTER, IRON PRESERVER, and FUEL SAVER (in many cases a ton of
coals being saved daily, composition only costing about 2s.)

Mr. TURNBULL, the eminent engineer to Messrs. Jackson and Graham, 30 to 38,
Oxford-street and Ogle-street, London, says:—"I have used your composition for
the last three months in Howard's Patent Safety Boilers, and found it a perfect
success,—after trying almost every other composition in the market, all proving
failure."

Engineers (who have not used it) are respectfully invited to give the liquid and
solid compositions (combined) a three months' trial. It is adapted to all kinds of
boilers and waters, free from acids, easily applied, and cheap.

For detailed information, &c., see circulars, &c.
Address:—G. W. HONEYMAN and Co., Somerset Chemical Works, Gateshead-
on-Tyne. N.B.—Infringements dealt with according to law.



THE "KAINOTOMON" ROCK DRILL,

The SIMPLEST, CHEAPEST, and BEST Machine in the World for SINKING, MINING, and QUARRYING,



Is extensively used at the principal Mines, Collieries, and Quarries of Great Britain, and the Continent of Europe.

"To this invention, which appears to possess several advantages over the machines previously exhibited at Falmouth, the Judges are unanimous in awarding a first-class silver medal" (the highest award).—*Report of the Judges at the Royal Cornwall Polytechnic Society's Exhibition, 1873.*

"The boring machine works splendidly."—W. TORRANCE: *Mid-Caldor.*
"For simplicity, compactness, and performance of work, your drill excels all others."—JOHN MAIN: *Crossfield Ironworks.*

"Under the most difficult circumstances, they give every satisfaction."—G. GREY: *Montreal Iron Mines, Cumberland.*

"The simplest and best boring machine."—Capt. WASLEY's letter to the *Mining Journal*, Oct. 18, 1873.

"It gives every satisfaction."—W. E. WALKER: *Lord Leconfield's Iron Mines.*

"The rock-drill I bought of you seven months ago has given me entire satisfaction, and I am convinced that the 'Kainotomon' is the best rock-drill in the market."—P. MCGINNIS: *Strabane.*

"I am quite satisfied with the working of it. For sinking pits it is a first-rate invention; I can do as much boring with it myself as six men can do by hand."—S. JENKINS: *South Wales Colliery Company.*



The advantages over other Rock-boring Machines claimed for the "Kainotomon" are—

- 1.—It is much shorter.
- 2.—It is much lighter, and more readily removed from place to place.
- 3.—It requires the turning of ONLY ONE, instead of a number, of set screws, to fix it in position at any angle.
- 4.—It may be fed 3 inches out of stroke, without stopping the working of the drill, an invaluable advantage.
- 5.—It is not liable to derangement.
- 6.—It has not one-third the number of parts in its construction.
- 7.—All stuffing-boxes and parts requiring adjustment are dispensed with.
- 8.—It is so simple in its construction that any ordinary labourer or miner can drive it, simply having to turn on the motive power and feed the drill.
- 9.—The rotation is compulsory, and regular.
- 10.—40 lbs. pressure only is required to work it.
- 11.—A saving of over 50 per cent. in iron and flexible piping.

"THE ECONOMIC" COAL-CUTTERS, AIR COMPRESSORS, BOILERS, &c.

THOS. A. WARRINGTON, 30, KING STREET, CHEAPSIDE, LONDON, E.C.

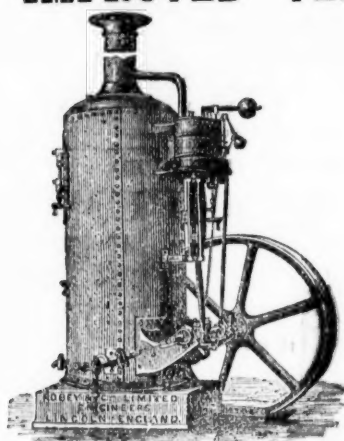
Patent No. 4136

Dated 16th December, 1873.

Patent No. 4150

Dated 17th December, 1873.

IMPROVED VERTICAL STEAM ENGINES AND PATENT BOILERS COMBINED.



The Illustrations show one of ROBEY AND COMPANY'S IMPROVED VERTICAL ENGINES:—

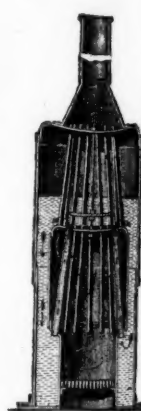
All these ENGINES are supplied with ROBEY AND COMPANY'S NEW PATENT VERTICAL BOILER, as per section illustrated which has, among others, the following advantages over all VERTICAL BOILERS yet produced:—

PERFECT CIRCULATION OF THE WATER.

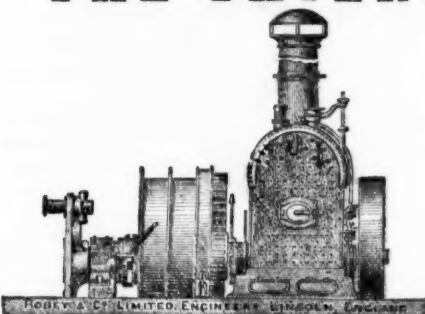
SEPARATION OF THE SEDIMENT.

GREAT DURABILITY.

GREAT ECONOMY IN FUEL.



THE PATENT IMPROVED ROBEY MINING ENGINE.



Some of the advantages of the New Patent Engines are as follows:—

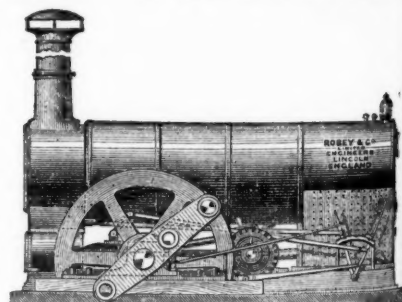
SMALL FIRST COST.

SAVING OF TIME AND EXPENSE IN ERECTING.

EASE, SAFETY, AND ECONOMY IN WORKING.

GREAT SAVING IN FUEL.

This New Patent Mining Engine is free from all the objections that can be urged against using the Semi-Portable Engine for permanent work, because it possesses the rigidity and durability of the Horizontal Engine, and at the same time retains the advantages of the Semi-Portable, in saving time and expense in fixing.



ENGINES UP TO 200 EFFECTIVE HORSE-POWER ALWAYS IN PROGRESS.

Prices and full particulars on application to the sole manufacturers:—

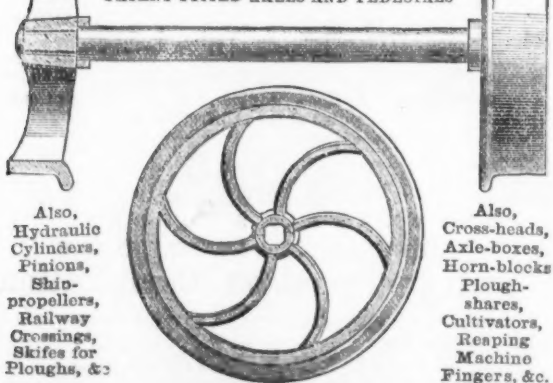
Robey and Co. (Limited), Perseverance Ironworks, Lincoln, England.

CAUTION.—Notice is hereby given, that any person infringing the above Patents will be forthwith proceeded against.

TO COLLIERY PROPRIETORS, MINING ENGINEERS, &c.

HADFIELD'S Steel Colliery Wheels

WITH PATENT FITTED AXLES AND PEDESTALS



Also, Hydraulic Cylinders, Pinions, Ship-propellers, Railway Crossings, Skiffs for Ploughs, &c.

Also, Cross-heads, Axle-boxes, Horn-blocks, Plough-shares, Cultivators, Reaping Machine Fingers, &c.

Hadfield's Steel Foundry Company,

MANUFACTURERS OF EVERY DESCRIPTION OF

CRUCIBLE CAST STEEL CASTINGS,

ATTERCLIFFE, SHEFFIELD.

CHARLES PRICE AND CO'S PATENT RANGOON ENGINE OIL.

THIS OIL is suitable to every kind of Machinery; it is used almost exclusively in Her Majesty's Dockyards and Fleet, and by the War Office and East India Government; as well as by the Royal Mail Steam Packet Co., Pacific Steam Navigation Co., P. and O. Co., Cunard Co., and by most of the other important Royal Mail Steam Fleets in the kingdom. It is also extensively employed on the various railways, and by many of the leading engineering and manufacturing firms at home and abroad.

"I hereby certify that the Rangoon Engine Oil, manufactured by Messrs. Chas. Price and Co., is free from any material which can produce corrosion of the metal work of machinery. It is calculated, indeed, to protect metallic surfaces from oxidation, and, from its peculiar character, is not liable to lead to spontaneous combustion of cotton waste or any similar material which might become imbued with it, as is the case with Rape, Gallipoli, and Olive Oils. The lubricating power of this oil is equal to Sperm or Lard Oil."

T. W. KEATES, F.C.S., &c., &c., Consulting Chemist to the Board of Works.

Extract from Mr. BAXTER's Speech in the House of Commons, May 31st, 1870:—

Chas. Price and Co.'s Rangoon Oil—"a vastly superior article" (speaking of Gallipoli Oil at £72 per ton)—"was obtained for from £40 to £45 per ton."

Every parcel of the Oil sent from the Works bears the Trade Mark of the Firm, and as many spurious imitations of the Rangoon Engine Oil are sold purchasers are requested to observe that none is genuine which does not bear this mark.

Oil, Tallow, and Colour Merchants, Seed Crushers, Turpentine Distillers, &c.

London: CASTLE BAYNARD, UPPER THAMES STREET, & MILLWALL, POPLAR.—Works: ERITH, KENT.

THOMAS WARDEN & SON, IRON, STEEL, AND GENERAL MERCHANTS,

LIONEL STREET, BIRMINGHAM,

Manufacturers of Anvils, Vices, Hammers, Bellows, Tue Irons, Hydraulic and Screw Jacks, Crabs, Cranes, Spades, Shovels, Picks, Arms and Boxes, Axles, Springs, Hurdles and Fencing, Screw Bolts, Washers, Hames, Chains, Files, Nails, &c., &c.

SECOND-HAND RAILS, AND EVERY DESCRIPTION OF RAILWAY, COLLIERY, AND CONTRACTORS PLANT ALWAYS ON HAND.

Original Correspondence.

HAND-BORING, AND THE DIAMOND ROCK BORER.

SIR.—Observing in the *Mining Journal* of Oct. 17 a statement of the prices whereat the Diamond Rock Boring Company undertake putting down bore-holes, and that the actual cost of sinking with the diamond drill is found in practice to be as nearly as possible the same as with hand labour, I have been led to draw out the comparative costs according to the statement referred to and the rates paid in the North of England for boring by hand labour, which I beg to append, and to express a hope that for the promotion of the increased use of the diamond boring machine the charges may be brought into somewhat closer approximation to those for hand boring.

Statement showing comparative cost to 100 fathoms in depth by hand boring and the diamond rock borer.

	By hand labour.		By Diamond Rock Boring Co.	
	Rate per foot.	Amount.	Rate per foot.	Amount.
For the 1st 100 feet.....	3 3/4	16 10 0	8 0	40 0 0
2nd	8 3	41 5 0	16 0	80 0 0
3rd	13 2 1/2	65 0 0	24 0	120 0 0
4th	18 3 1/2	91 10 0	32 0	160 0 0
5th	23 3	116 5 0	40 0	200 0 0
6th	28 2 1/2	141 0 0	48 0	240 0 0
Total 600 feet.....	av. 15s. 9d.	472 10 0	av. 28s.	840 0 0

MINER.

TIN MINING IN AUSTRALIA.

SIR.—Since my last very little has transpired either in Tasmania or other parts of Australia to call for special notice relative to tin mining, &c., owing to bad weather and the difficulty of transporting the ore to a place of shipment. The produce from Mount Bischoff mines will not I think influence the tin market in any way at present; as I have previously stated, there is a good show of tin ore at Mount Bischoff, and if properly managed will be a commercial success. The present low price of tin and the high rate of carriage is a drawback, but I find a tramroad is about to be constructed to convey the ore to the coast. I also hear that tin smelting-works are about to be erected on the banks of the Tamar. Tin ore exists in other parts of the island, which will be of commercial importance to Tasmania generally. To say that the tin market will be glutted from this source is simply a mistake, and before tin miners relax their efforts and become alarmed on account of the tin ores produced in New South Wales, Queensland, or Tasmania, they should bear in mind that the "cream" of the deposit is not left to be worked last. Since the first discovery of alluvial tin in New South Wales and Queensland the miners have had time to examine and remove many of the best deposits available. When large, rich, and well-defined lodes like Old Wheel Vor and some other mines in Cornwall have been discovered in Australia, it will be time enough to become alarmed as to the continuation of a very low price of tin. JOHN HUNT.

Geelong, Victoria, Sept. 4.

SILVER MINING—THE NEW PACIFIC.

SIR.—It is much to be regretted that this promising mine is not more energetically worked. To go on trying how little can be made to do keep the concern afloat is not the way, in my opinion, to make it a good paying mine. The property is beautifully situated in the heart of the rich metalliferous zone of Lander Hill, surrounded by good mines, and embracing some of the same lodes, and has itself yielded largely the richest kind of silver ores. I know the district well, and firmly believe that if they would sink their shaft and open up the lodes to a greater depth they would find them as rich as formerly. What signifies the bottom level being poor? Many substantially good mines of the present time encountered a similar reverse in their progress and survived it, which if they had ceased sinking would not have been the case. If sinking were stopped when lodes declined in value, or ceased even to be productive at a certain bottom level, very few of our celebrated mines would have become distinguished. I remember an instance of a mine with which I was connected where we drove the then bottom level 100 consecutive fathoms under a run of ore ground which had been prolific almost to the surface, and scarcely found a ton of ore in the whole drive, but the lode at the next level below was as rich as formerly, whilst level after level successively, to a very great depth, were equally good. I know of nothing in the nature of the ground at Lander Hill which can more than temporarily affect adversely the productiveness of the lodes. They are subject to faults, it is true, but those occasion mere local disturbance in a highly conventional sense, the ultimate, and sometimes the immediate, effect of which is an increase of productiveness. If the mine were in this country no reasonable amount of money would be spared in giving it the trial in depth which its merits so eminently entitle it to. Why, then, withhold it there? Give mines abroad the same chance that is given them at home, and it would be then found that their supposed treacherousness was due in a large number of cases more to artificial than to natural causes.

If a mine is worth working at all it is worth working vigorously and well; if experimental points have to be tested, it should be done in the most expeditious and effectual manner, and in a direction which would confer the most solid and lasting advantages. But paucity of means too frequently lead to paucity of results, and in this respect the New Pacific is no exception. Originally a rich dividend-paying mine, no provision appears to have been made for any reverse which might befall it, and as it, like all other mines—especially those which are not fully developed—is liable to be affected by unfavourable changes, there is but one result to be apprehended from their recurrence—financial embarrassment and depression, and that is what the New Pacific has been doomed to experience and forego.

I have more than once said when taking a cursory survey of mines in Lander Hill, and contemplating the attractiveness of the scene which presented itself to the eye and to the mind, that I should not despair of success if sinking a prospect shaft at almost any part of it, where even no lodes were visible or could be demonstrated to exist, provided that ownership of the surrounding ground entitled to the benefit of the discoveries which would be made by the exploration. If I were personally addressing the owners of the New Pacific I would say—Gentlemen, you have a shaft already sunk 200 or 600 ft. in one of the most desirable situations in the district, from which have been drawn large quantities of very rich ores. The decline which has succeeded is due, it is to be presumed, to temporary causes which I honestly believe will disappear at a greater depth. Your own manager's letter on the prospects and state of the mine, published in last Saturday's *Journal*, adds strength to my conviction on this point. It is clear to my mind that the falling off in the value of the mine has arisen from a slidey channel of ground having intervened, and that the best way to be quit of its unfriendly effects is to get below it as quickly as possible into the firm and compact ground, which at Lander Hill is most conducive to the productiveness and prosperity of the mines. I do not see how you can reasonably expect a permanent improvement to take place under such circumstances, unless you take steps to bring about that desirable change by getting into a more settled country rock. The lode continues to go down with undiminished strength, but seems to be impoverished from an unfavourable change in the ground, which I think should be regarded as a mere adventitious occurrence. In that light your best, if not your only, chance of success is in sinking the mine deeper.

The remarks which I have thought proper to make concerning this mine may be differently regarded by different individuals. Some may think that they are wholly gratuitous, prompted by an inclination for meddling with other people's business, whilst there may be others who think that those who possess any knowledge or information which may be beneficial to capitalists of this country in prospecting their enterprises in foreign countries should not hesitate to express it in the plainest manner possible.

In respect of myself, I have only to say that what I have written has been prompted by a desire to benefit mining, as I know nothing

of the parties concerned in this adventure, and, therefore, have nothing to gain or lose by their success or otherwise, except only so far as that all parties who are wholly devoted to mining are necessarily affected—at least indirectly—by the good or ill success of each individual enterprise.

Llanrwst Lead Mines.

ROBT. KNAPP.

COAL MINING IN ITALY.

SIR.—I have no quarrel with the directors of the Sasso Forte Collieries Company, nor with their secretary, Mr. Cockerton; nor with their consulting engineer, Mr. Brunton; nor even with "A Large Shareholder." He attacked me in what I considered a very unfair and unwarrantable manner; I could do no less than defend myself, and this, I believe, your readers will admit I have done in a good-natured spirit. My quarrel is solely with Mr. Montelli, and solely on the ground of his course of action, being simply, as I consider, ruinous to the company. "A Large Shareholder's" pretence that I am "slanging" the Sasso Forte Company's property for the purpose of "getting off" some of my own is as false as it is transparent. My interests are identical with those of the Sasso Forte Collieries Company, and if the directors listen to him (which they have done too much for their own interests already) and not close in with me, let me inform them that it will be to their loss and not mine, for I have friends in England and Ireland with capital enough to take up these properties and work them, which would seriously interfere with the Sasso Forte Collieries Company.

I believe that Mr. Brunton, the consulting engineer of this company, would himself join me in recommending the directors to change their intended line of railway, now that he understands that by the line proposed by me seven other collieries would be picked up, and that we would also in all probability have the co-operation and assistance of such a nobleman as the Commendatore Ferrari-Corbelli, whose mines it would take up as well as ours. Besides which it would save 18 miles of the Roman Railway, and run across a much easier country, as this gentleman's son, Mr. W. A. Brunton, well knows, as he, together with the Cavalier Le Neve Foster, surveyed the proposed railway by the Rocca Strada route, and he well knows the number of viaducts and tunnels which that rugged country would require, whereas the railway proposed by me would be principally across the plains, and consequently much cheaper and easier in construction, not to mention the infinite advantage of picking up so many other mines, while by the Rocca Strada route no other mine or industry could possibly be included. The contractor when he comes out cannot fail to see this. Other English capitalists, who are now purchasing and developing immense properties on the boundaries of my proposed line, may also be induced to join, whereas by the Rocca Strada route no possible advantage or benefit can be adduced.

"A Large Shareholder" states that I am in league with "A Looker-On." I believe I know who that gentleman is, but he is several hundred miles away from me, and his only league with me is the league of truth. He has seen the mismanagement of Mr. Montelli, and in the interest of English capitalists in general he could not refrain from assisting me in exposing such conduct. Mr. Montelli (according to "A Large Shareholder") talks of prosecuting me for libel when he returns to Italy. I have little fear of that. He will have too much respect for his own liberty to do so. "A Large Shareholder" charges me with mercilessly attacking the company. I never have attacked the company in any shape or form. I was sent out here by the directors to watch their interests, and had I not reported wrong doings I should not have been doing my duty as an honest man by them or my fellow-shareholders. He also quotes some extracts from my letters and those of Mr. Godfrey and my assistant, Mr. Farnsworth, to prove the goodness of the coal. The readers of the *Mining Journal* know that all my letters in that world-wide diffused *Journal* prove the same thing. Why he should bring this as an accusation against me I cannot comprehend. As he professes to be "A Large Shareholder," I think he ought to be very thankful to me for having "ever and always" upheld the character of this coal. In doing so I have only been stating the simple and honest truth, and I should have been untruthful had I not done so. When the directors look the matter straight in the face they must admit that I have acted throughout as their best friend. I have always told them the truth boldly, fearlessly, and honestly. The affair is *bona fide*, and does not require bolstering up.

Rocca Tederighi, Italy, October 22.

W. J. JACOB,
Mining Engineer.

VENDORS AND PURCHASERS OF MINERAL PROPERTY.

SIR.—An experience which I am now going through in a mining negotiation leads me to the desire of addressing myself to you, with the view of learning, if I can, what is considered to be a legitimate basis on which arrangements should be made between the owner of a mining property and the investors who are invited to take part in an enterprise of that nature. I was recently commissioned by a friend of the highest respectability—a retired merchant—to make an arrangement to get a valuable gold concession, of which he is the proprietor in perpetuity, developed with adequate capital. The property is most favourably situated for working, connected by an excellent road, with a steamer station, a considerable town a mile distant, and a river boundary, the property for a mile affording abundant water-power, &c.

My friend purchased the property some few years since, when it was first discovered that gold had been found in the district, but he preferred to keep it on, and to pay up the annual dues to the Government in commutation of all export duties and royalties till other parties on adjoining properties had practically tested the productive powers of the country for gold. This result having arrived, he applied to the authorities in Jermyn-street to recommend two reliable mineralogists to report on it. This they did, and he sent out first one and then the other, and received their reports, giving the most favourable account of the property for regular lodes, streaming ground, placer diggings, and quartz rocks, all unusually rich in gold, and they estimated that with a moderate capital the property would produce over 50,000*l.* a year of profit. One of them offered to give up his profession here to manage it upon a commission on what the property produced.

In this state of circumstances, and notwithstanding he had laid out a considerable sum of money, his direction to me was to offer the property to parties here without asking one shilling of money—that the parties finding the capital to develop it, say, 20,000*l.* at the outside, should manage the property, and should receive back the whole of their capital with interest; but after that the estate should be dealt with on the principle of equal division—the investors to retain in perpetuity 40 per cent., and he, in respect of his original outlay, which he did not ask to be repaid, and for his profit to have 60 per cent. The proposition has been put forward, but somewhat to my surprise it does not meet with any acceptance, in fact, I am told that it is extravagant and extortionate, and so forth. Now, it is on the general question that I should like to ask what are the fair principles in mining enterprises upon which vendors and purchasers should base their arrangements without being open to animadversion? Surely there should be a principle to govern such cases, as fair to one as the other. My friend is told that he has not hit on it; what then is it? Or is mining in this country so much a matter of speculation, or partaking so much of gaming that no such basis can be laid down, as between vendor and purchaser? I forbear to cite numerous examples which have shocked the public of the course pursued by vendors who have been, to say the least, unscrupulous, but when another vendor comes forward with a proposition certainly essentially different from what is experienced here it appears to be distasteful and unacceptable.

Is it part of the pleasure of mining investment that shareholders like to become victims, and to have a great grumble at their fate? I begin to think that if my friend desires to succeed in this market he must adapt himself to the habit so established here, and to come forward at once and ask a round 100,000*l.* cash for his property—he might then succeed. But before he does so, I think he would like to know if this is the inevitable and established course of proceeding here. I think that if may not be unattended with some advantage if I may be at liberty to raise the general question, it may be

of utility in more ways than one to discuss it; it will at any rate serve to point out to my friend in what way he has erred, and he will doubtless be glad to be instructed.

New Broad-street, Oct. 28.

A. C. H.

THE NORTH WALES SLATE QUARRYMEN'S STRIKE.

SIR.—The Penrhyn Slate Quarries, beautifully situated at the foot of the Ogwen Pass, and forming in themselves a complete amphitheatre in a horseshoe shape, have long been famed, not only for the excellent quality of the slate produced, but also for their extent and yield, and the perfect system under which they have been worked. In a commercial point of view they have long ranked as one of the most successful establishments in North Wales, and no tourist would think of visiting the Principality without inspecting them. Under the able management of experienced and trustworthy agents, they have not only produced a princely income to the noble proprietor, but have proved a source of wealth to the whole locality, from 12,000*l.* to 14,000*l.* per month having for years been regularly distributed as wages amongst the quarrymen, many of whom have become men of substance, the houses in the town and neighbourhood of Bethesda being far the most part owned by them. Such prosperity could only exist under the fostering care of a benevolent proprietor, and hitherto no one has been more popular, and deservedly so, than Lord Penrhyn and his agents, who have always proved most kind and considerate to the workmen employed in the quarries. To such an extent has this been carried that to become a quarryman in the Penrhyn Quarries was not only to ensure permanent employment at liberal wages for the man himself, but for all his family. No matter how many sons appeared on the stage, all were received into the quarry. As boys they were allowed to commence making small slates from the rubbish heaps, and as youths to work on any spare rock they could find, without being required to remove any of the bad rock or rubbish, until they learned the business, and then bargains were granted to them as skilled quarrymen, so soon as suitable rock could be found, on terms that would enable them not simply to maintain themselves but to save money.

It might be supposed that in a locality so well cared for contentment and respect for employers would reign undisturbed, but not so. Strikes are the fashion of the day, and some restless spirits felt that the quarrymen of Bethesda would be behind the world at large if they could not also raise a cabal and get up a strike. Unhappily, they have had their way, and the result is that they have already reduced many families who were enjoying comfortable homes and well-spread tables to misery and distress; and what is more, they have created such general distrust and discontent amongst the quarrymen generally in North Wales that it is difficult to foresee where the mischief may end.

The history of the strike is unparalleled, and almost incredible. I have already described the prosperity of the men, and some of the advantages they enjoyed. A strike or lock-out took place in the neighbouring quarries of Mr. Assheton Smith some months since on several questions, one of which was the demand of the men that Col. Wyatt, a newly-appointed agent, should be removed, and Mr. Assheton Smith applied to Lord Penrhyn to join him in a lock-out, and so put an end to the mischievous attempt of the Quarrymen's Union to interfere in the management of his quarry. Lord Penrhyn declined to do so, but finding that his men were contributing to the support of the men on strike he wrote and published a placard, forbidding any of his men to contribute to the support of a strike having for its object interference with the management of his neighbour's quarry.

The men at Mr. Assheton Smith's quarry eventually withdrew their application for the discharge of Col. Wyatt, and expressed their regret that they had ever so far attempted to interfere with Mr. Assheton Smith's undoubted right to appoint his own agents, and other minor differences having been arranged the strike was ended, and the Dinorwic men returned to work.

No sooner was this strike over, than Lord Penrhyn's men turned round on him. It is true that he had not co-operated with Mr. Assheton Smith, when pressed to do so; but he had sympathised with him rather than with the men, and shown his disapproval of their attempt to dictate what agent should, or should not, be appointed by him, and a committee was forthwith appointed to devise means for punishing his lordship. There are 25 galleries in the quarry, two men were selected from each of these galleries to form the general committee, and a limited number of the more active and determined characters were selected from them to form the working-committee. A list of grievances, or demands, based for the most part on positive interference with the arrangements and management of the quarry, was drawn up, including a demand that every bargain should for the future be one-sided, and that a minimum rate of wages should be granted—that a bargain man should for the future never be paid less than 30s. per week, no matter how few slates be made; but that if he earned more—say 5*l.* or upwards—he should be paid the amount. These demands having been reduced into writing, were sent to Lord Penrhyn, who was in London, by post. He received them at half-past 8 o'clock in the morning, and at 11 o'clock, before there was the possibility of replying, he received a telegram to inform him that all the men, 3000 and upwards, were on strike, and had left the quarry. This strike lasted seven weeks, during which time negotiations were carried on between Mr. Pennant Lloyd, his lordship's principal land agent, on his behalf, and the acting committee of the quarrymen, in the course of which the committee not only expressed their desire to have the principal quarry agent removed, but actually ventured to recommend a friend of their own to be appointed in his place. This was too much, Lord Penrhyn is too just a man to allow an old and faithful servant to be borne down and crushed at the dictates of a cabal, and that simply because he had faithfully done his duty, and watched over and protected his lordship's interests; he nevertheless, made very great concessions to the committee, much greater than in a business point of view ought for one instant to have been listened to, and the granting of which has already landed him and all his dependents in the quarry, and indeed, the whole locality, in great difficulties and distress. These different concessions were reduced into writing, and communicated to the committee by Mr. Pennant Lloyd in the shape of letters, which have been published in the local papers. They included, amongst other points, an understanding that the quarry agents should be directed in granting bargains, to set them on such terms that every quarryman using due diligence and skill should be able to earn at least 27s. 6d. per week, and every rubbish man at least 25s. per week. That youths of 20 years of age should be absorbed into the quarrymen, and have bargains found them as soon as suitable profitable rock could be found; that where such youths had been working on rock as 10s. in 1*l.* workers, they should have regular bargains granted on the same rock if it could be profitably worked by bargain; that bargain men should be allowed to choose their own partners, and that men who had gone away, and obtained work elsewhere, should have their old bargains reserved for them for one month, to enable them to return if they chose to do so. These, and other minute stipulations, all interfering with the general management of the quarry, and more or less curtailing the power and authority of the quarry agents, were from day to day extorted from Mr. Pennant Lloyd by the committee, who finally acquired a power which bids fair to end in dire confusion, and has already occasioned a seven weeks further strike, and its consequent loss and misery in the district. One of these stipulations was that, in the event of any dispute or difference of opinion arising between the quarry agents and the men, either as to the terms of a bargain or otherwise, the committee should be at liberty to interfere, and at their request the matter should be referred to Mr. Pennant Lloyd, or in his absence, to some gentlemen named by him, as referees, whose decision was to be acted on. The object of this stipulation was to prevent the recurrence of any strike in the quarries for the future, and unhappily it has been used by the committee as an excuse for bringing about and prolonging a further strike, as the means of showing their power and authority.

It being understood that the concessions here alluded to were satisfactory to the committee and men, the strike was declared to be at an end, and on Sept. 17 last the agents attended to set the bargains, and very nearly 200 were granted, and in the great majority of cases the men began to work them. In a few cases, however,

some difference of opinion as to terms arose between the agents and the men, as must on every setting occur, and on the next morning the whole of the men in the quarry again struck work, including those who had already accepted bargains and began to work them, and those also who had not yet asked for or had terms offered them. Mr. Pennant Lloyd had gone on to the Continent. Lord Penrhyn did not proceed to put the law in force by summoning, under the Master and Servants Act, those men who had entered into contracts for the month on terms which they were themselves satisfied with, but which, at the bidding of the committee, they refused to perform, and, unfortunately, began again to temporise with the committee, who thereby became masters of the situation.

It was proposed that Mr. Wyatt, the agent for the sale of the slates at the port, should act as referee in the absence of Mr. Pennant Lloyd. This was at first assented to by the committee, then objected to by them, and finally again assented to. Mr. Wyatt, although an excellent agent for the sale of slates, is altogether ignorant of and does not profess to know anything of the practical working of a quarry, or the setting of bargains, and Major Mathew, of the Festiniog Quarries, a gentleman of the highest character for integrity and honour, has, therefore, been called upon to assist and advise with him on those points where a practical quarryman's opinion may be required, but most unfortunately Major Mathew's experience is confined to the Merionethshire Quarries, which contain slate of a totally different character, and are worked in a very different way to the Carnarvonshire slate quarries, to understand the working and setting of bargains in which requires a long apprenticeship of practical experience. However, as Lord Penrhyn and the committee appear to be satisfied with Major Mathew's judgment in the matter, it is not for others to object, although as this has now become a public question, and may have an important influence on the working of other quarries in the district, and as the judgment and discretion of his lordship's quarry agents, who have long been looked upon as the most experienced and upright agents in the county, have been called in question, it is certainly to be regretted that some gentleman who was better acquainted with the different qualities and working of Carnarvonshire slate was not selected for so important a duty.

All preliminaries having been arranged, the reference commenced last Monday week, and it is understood that the evidence, *pro* and *con*, will be concluded during the present week. It was arranged between all parties that the strictest secrecy should be observed, and that even the nature of the questions in dispute should not be allowed to transpire, but inasmuch as the committee consists of 50 individuals, it is not to be wondered that the general character of the complaints brought forward by the committee have oozed out.

They were originally confined to six cases, but have by degrees expanded to somewhere between ten and twenty, the exact number not being known by the outside world, and they are in substance—

1.—That the agents have refused to grant bargains to some of the 10s. workers on rock where they have been working.

2.—That in two or three cases the bargains offered to the men were not liberal enough, and would not enable them to earn the full wages of 27s. 6d. per man per week.

3.—That in one case a man was not allowed to chose as his partner another man who had left the quarry and was working elsewhere.

4.—And finally, that in setting the bargains the agents have in some cases granted the men terms which, while they will secure them full pay on the footing of Mr. Pennant Lloyd's arrangement, and cannot, therefore, be objected to in their interest, they may, if the men are tricky, be worked in such a way as to be highly detrimental to the interests of Lord Penrhyn, and the committee desire, therefore, to protect his lordship's interest as against the improvidence of his own agents.

The answers which the agents may be enabled to give to these questions are not known, but the general character of the charges are open to observation.

1.—As to the first charge. According to Mr. Pennant Lloyd's published letters, the 10s. workers on rock were to have bargains granted them only in those cases where the rock could be worked profitably as bargains, and the question resolves itself into the practical one—Can the rock in question be worked profitably on the bargain system? and who is to decide this, the quarry agents or the men themselves? Mr. Lloyd's letters are silent on the subject, and the committee seem to think that they are the proper parties to determine the question, and having formed their own opinion they seek to enforce it by a general strike throughout the quarry, instead of referring the question in the first instance to Mr. Pennant Lloyd's decision, as arranged on the termination of the first strike.

2 and 3.—As to the second and third charges, these again are questions which clearly ought, under the arrangements, to have been referred without any strike, and the fact of the strike being resorted to tends to show that the committee cannot rely on the strength of the cases to be brought forward, and, therefore, try to enforce the granting of the demand by a strike.

4.—The fourth set of complaints is simply a barefaced attempt to make mischief between Lord Penrhyn and his agents by throwing a doubt on their judgment and integrity, and so to try and induce his lordship to place his interests and the management of the quarry under the entire control of the committee themselves, or, what is tantamount to it, under the control of the agent they have already proposed for the post, or some other of less experience, and not of the same tried integrity as the gentlemen in question.

The result of the present struggle is looked forward to with the greatest interest by the whole of the quarry proprietors in the county. The mischief already done by the strange concessions made is almost incalculable. Every manager of a large body of men, whether an officer in the army, or the manager of a great manufactory or commercial undertaking, ought to have supreme control over them, with full power to check and punish insubordination or idleness, in the army according to the rules of military discipline, and in commercial undertakings by peremptory dismissal of the delinquent; and if the managers of quarries are to be kept under the harrow by having a committee of the men to overhail and question everything they do, and on an understanding with the proprietor that they are to be at liberty so to act, and that every complaint, no matter how frivolous it may be, shall be patiently listened to and thoroughly investigated before some referee, the manager's life will simply be intolerable, and he will, if he is a man of integrity and character, be forced to resign a post that no one but a dishonest sycophant, who would consent to shut his eyes and truckle to the idleness and peculation of the men, could accept. Only fancy a committee of soldiers being allowed to question and sit in judgment on any order given by their commanding officer, with liberty to report to the colonel of the regiment. I do not mean by these observations for one instant to reflect on Lord Penrhyn's respected agents for having consented to hold on and retain their posts for the present; on the contrary, the greatest credit is due to them for the forbearance they have already shown under the most trying circumstances, since their immediate resignation would add greatly to his lordship's present difficulties. Their course seems to be to wait patiently and see the end, and then to act as occasion may require.

Lord Penrhyn is known to be a high-minded, generous nobleman, whose constant care it has been to promote the interests of the men in his employment, and in his great anxiety to preserve a good understanding with his quarrymen he has unfortunately lost sight of what is due to himself, his agents, and others. If, in the first instance, any real grievances, whether as to increased wages or otherwise, had been conceded, and the men had been told clearly and distinctly that they might either return to their work or seek employment elsewhere, but that no further concessions would be made (and it must in the end come to this), they would to a man have returned to their work at once, and the 14 long weeks of idleness, with the consequent misery and heartburnings which have been brought on the district, would have been spared; but, as it is, the constant giving way on apparently small points, but really on vital ones, has led the committee to believe and boast that they have only to ask, and pertinaciously to insist on, something more to obtain it. It is the general belief that the quarry cannot be carried on as a paying concern if the existing arrangements are to continue. It is simply preposterous that, because on the setting of some 200 bargains about half-a-

dozen men do not like the terms offered them, the whole of the works are to be stopped. In any other concern of the same magnitude in the kingdom such disputes between the managers and men are of weekly, if not daily, occurrence, and if the men do not like the wages offered they go elsewhere and seek other employment; and why should the Penrhyn Quarries be the single exception to this well-known universal rule of political economy. His lordship is supposed to be sorely afraid that, if he makes a decided stand, some uncomplimentary comments may be made on his conduct in that portion of the local radical press which has from time to time opened its columns to the complaints of the committee, and to lose sight of the injustice he is doing to his agents and those quarrymen who are desirous of being relieved from the thralldom of the committee, and some of whom, it is understood, have written to him expressing this, and also to lose sight of the great mischief and wrong his concessions inflict on other quarry proprietors, who are being to a certain extent compromised thereby. His lordship is at the present time blamed by all practical men who know the merits of the case for prolonging the distress of the neighbourhood, by tamely submitting to the dictates of, and trying to keep on good terms with, a committee who, while they insist on the continuance of this strike, and prevent the men, who are most anxious to return to their work, from doing so, are themselves drawing their full monthly wages out of the contributions raised for the men at large before any division of the fund is made, and whose interest it is, therefore, to prolong this strife to the utmost, that they may live in idleness.

Nantlle, Carnarvon, Oct. 29. — A QUARRY PROPRIETOR.

PRACTICAL MINING—FILLING ORE.

SIR,—Having noticed in last week's *Mining Journal* a suggestion that continental miners are superior to English, I should like to get some facts to enable me to compare Americans and English. How many fillers could be put in a heading 8 ft. square, without their being in each other's way, to remove the stuff thrown down by a blast of 30 holes, each 4 ft. deep, charged with dynamite? The rock is very much shattered by the blast, so that it is easily filled.

There is a tramway laid to within 20 ft. of the face, 2-ft. gauge, and movable sections to take the trucks, which hold 6 cwt. each, close up to the fall. Now, there must be somewhere about 250 cubic feet of rock thrown down, which I calculate at about 6 tons, so that there would be 20 wagons to fill. The filling is set to 36 men, that is 12 for each shift, and the 12 are divided into two parties of six each, who work for 20 minutes, and rest for 20 minutes. They fill the 6 tons in about 2 hours and 40 minutes, but I am told that whites, and especially Cornishmen, if well paid for it, could work eight in the end instead of six, and would fill 3 tons per hour. The air in the end is extremely good, and could be increased to almost any extent, as the tubes bringing compressed air for the rock could be used for ventilating if required. I should be glad of the opinion of some of your Cornish miners on these points, and should also like to learn the largest quantity that could be filled by one man in 20 minutes. I should mention that in the work in question all the men are paid so much per fathom of ground removed; that the rate is guaranteed to them (though it may be increased if any specially hard rock is struck) for the whole length of the tunnel, which is to be about 2000 yards long, and that the more they earn the better the contractor is pleased. The fillers have nothing to do with the machine drilling or blasting. —Oct. 27.

INDIANA.

TIDAL CANALS, &c.

SIR,—Under this heading I have been generously allowed the insertion of two letters in the *Mining Journal* of Oct. 17 and 24. My main object being the prevention or lessening of shipwrecks around the British coasts, which have been so sadly prevalent during the past fortnight, and probably may be increased in number through the approaching winter season. It was this feeling that induced me to introduce, with the proposed tidal canals, the proposed floating breakwater refuges as an auxiliary aid, both being co-operative preventives of shipwrecks, although distinct and separate in agencies. An old adage recommends "striking whilst the iron is hot," and, if I may be allowed, I am anxious to offer a few addenda remarks on my foregoing observations and propositions, which I trust will ultimately, and without delay, be soon practically recognised and adopted at home and abroad, for it is very evident from the recent reports from our Indian and the Chinese coasts that the losses have been immense, through monsoons, cyclones, &c., and which ill effects can be prevented, or reduced considerably, for the future, if proper means and appliances are adopted and used. These propositions of mine require a strict examination and investigation of their probable merits by committees of practical men of business, who will fairly and disinterestedly judge and decide for themselves whether the proposals are deserving of recognition. If other projects, or better propositions than mine can be suggested and offered, these should by all means have the preference, but it is certain that without more delay or procrastination something really effective must be adopted to check the increasing shipwrecks and losses of life and property, if only on the score of humanity and benevolence towards our brave seamen, fishermen, and others who are continually exposed to the perils and dangers of the sea, especially around our iron-bound coasts, where, at present, so few and far apart refuge harbours really are to be found.

W. AUSTIN, C.E.

62, Dartmouth-terrace, Bermondsey Park, Oct. 28.

COMMUNICATION ACROSS THE ENGLISH CHANNEL.

SIR,—The importance of establishing a rapid communication across the English Channel being now universally understood, it is safe to assert that the actual unsatisfactory state of things must cease before many years have passed. England and France will be connected by railway before the end of the century, either by means of a submarine iron tube, as I proposed in the *Mining Journal* 30 years ago, or a tunnel bored through the strata far below the bed of the Channel. In the meantime, it is interesting to note the progress made in the construction of Channel steamers, and, doubtless, these can be improved so far as to render the transit more rapid and less disagreeable than at present. I will, however, venture to predict that the twin-ship will prove a great failure. I am utterly at a loss to comprehend how the designer—a seafaring man—could have succeeded in persuading himself that such a vessel will not roll on a heavy sea. A practical shipbuilder could have never made such a mistake. During a gale it will be found that one of the sections of the twin-ship will be raised to a perilous height on one wave while the other section will sink in the trough of the sea; and, what is still worse, owing to the deficient propelling power, she will prove unmanageable in making the harbour. The safety of a vessel constructed on the twin or triplet principle must depend on its length—say, 1000 ft.—so that it may glide only on the higher section of several waves at the same time, and on being furnished with an enormous propelling power. Such a structure would be a floating bridge, and might be made to convey the trains, with the locomotives, across the Channel, thus preventing any delay on either shore; but the cost could not be less than 1,000,000 sterling, and the required dock accommodation at least an equal sum. The prospect of seeing such a bridge constructed can, therefore, be only looming in a distant future. The twin-ship already constructed answers to none of the above requisites. Her one central paddle-wheel, although of large dimensions, will prove almost useless during a gale, as it will be raised during half the time out of the water, when it will whirl round at a terrific speed only to be almost arrested by the rising wave.

The Bessemer Ship is a very different structure: she will prove the best Channel steamer afloat, and will safely maintain a high rate of speed during the strongest gales. Her swinging saloon will, doubtless, prove of great value to passengers, but how far it will prevent that distressing symptom, sea sickness, is very doubtful. It is not the mere rolling of the vessel which causes sea sickness, but the rising and falling as it passes from one immense wave to another, and this even the Bessemer Ship cannot avoid. The principle of its construction there is no doubt is sound, but that principle is inapplicable to small vessels. It will be only when we see Bessemer ships 1000 ft. in length that the ugly effects of rolling and pitching

will be avoided. Such vessels would, as it were, trample down the waves. There would be no necessity for giving such vessels a great breadth of beam, for although a narrow hull is unsafe in a small vessel the danger diminishes with the increased length. Had the late Mr. Brunel understood this the Great Eastern would not have been a gigantic failure. With a length of 680 feet he gave 84 feet beam, little more than half of which would have been sufficient; and I believe that we shall see Bessemer steamers 1000 feet in length, with only 40 feet beam. Strength of construction and adequate propelling power being all that is required to render such vessels steady during gales, and at least as safe as railway trains.

The great question now to be solved is, How will the railway across the Channel be constructed? The reply must form the subject of a future communication.

JOHN DE LA HAYE.

Jersey, Oct. 26.

PROFITS ON CORNISH MINES.

SIR,—In your valuable *Journal* of last Saturday it is stated that the Lemon family derived great wealth from Wheal Virgin in Gwennap. Allow me to correct your correspondent. It was Wheal Fortune and Wheal Virgin in St. Hillary, the same lodes which pass through Penberthy Croft, now being profitably worked by Mr. Thos. Field and a few friends. The tin lode now being worked is for its size the richest in the county, and the copper coming from another lode is more like the Burra Burra ore of Australia than any known British ores. There being no expensive pumping-engine required here, and ample water for stamping, it will be seen how very favourable are the conditions under which the mine works. A profit of about 200l. per month is being made from tin and copper, which may be considerably increased as the mine is opened up.

MINING IN YORKSHIRE.

SIR,—The Craven Moor Mines, which are situated between Skipton and Pateley Bridge, are being taken up by the Messrs. Sharp, of London. The name of that firm is a sufficient guarantee that the property will be worked vigorously, and in a miner-like manner. At Black Hill a fine discovery of ore has been made; a vein 7 ft. wide has been cut into, yielding excellent ore in paying quantities, and I wish them every success.

To the north of this property are the celebrated Cock Hill and Sundside Mines, the property of the Hutchinson family, who worked the mines themselves for the last 150 years, and have realised an immense fortune therefrom, 1,000,000l. sterling worth of lead ore having been extracted from the back of the adit level. There are 14 veins traversing the estate, and all productive in lead ore. The deepest point at the mines is only 20 fms. under adit, where the vein is 10 ft. wide, yielding from 7 to 8 tons per fathom of rich ore, and the vein seems to improve in depth. They smelt all their ores on the spot, and sell it in pig-lead to great advantage.

There are other very rich mines in the locality, Merryfield and Stoneygrooves, Prosperous and Providence, and the Grassington Moor, the latter the property of the Duke of Devonshire.

Oct. 28.

C. W.

GOLD IN THE WYE VALLEY.

SIR,—Your correspondent—Mr. Edward Gledhill—has thought proper to tilt a lance with me, and appears to assume the position of Sir Oracle. I regret on his own account that he should find it convenient to distort my remarks at the late meeting of the Wye Valley Lead Mining Company. I dislike prolixity, and, therefore, will not re-quote more than necessary. A careful perusal of the report of my speech upon that occasion would have shown him that I never associated gold with galena. Dr. Percy is quite right. The proportion of the former metal with the latter is infinitesimally small, rarely exceeding a trace. But in the mountains of Wales, to which I referred, I re-asseverate there exists more gold ore (the last word was inadvertently left out in the report) than, to use a figure of speech, all the horses in the Principality could draw away. Gold here—gold there—gold everywhere—Merionethshire, Cardiganshire, and, where I was then addressing a most highly intelligent audience, Montgomeryshire. This noble metal appears to permeate the rocks in every direction, but, of course, in variable proportions. Free gold is of frequent occurrence, but to obtain it in payable quantities the appliances now in vogue will have to be considerably modified and others supplemented. A machine which will recover gold from the tailings when these are supposed to be exhausted, promises to accomplish the end in view. In Rickard's Amalgamator a gigantic stride has been taken, as the following quotation from a letter received this day from Toronto will explain:—

"Having thoroughly tested Rickard's patent amalgamator on a working scale in this mill, on one of a most refractory character—auriferous misspickel—I have no hesitation in stating that it is by far the best machine I have met with, both for extracting gold and recovering the floured mercury. On my last run, 31 lbs. of floured mercury was recovered by its agency from tailings, which had carried off in working 30 tons of ore by the washer pan and settler arrangement—Signed, John Robson, Manager of the Dean and Williams Mill, Toronto Gold Company's Mines, Marmora, Ontario, Oct. 12, 1874."

Another invaluable aid to the same gratifying results is to be found in Mr. Wright's Concentrator, experiments with the working of which I am now actively engaged upon, therefore I reiterate what to Mr. Gledhill appears to be a Quixotic opinion—

"I have no doubt that in the mountains of Wales there is more gold (ore, as originally expressed) than all the horses in Wales can draw away, and there is no knowing whether it may not be the destiny of the Wye Valley shareholders to come upon some of it, and to make large fortunes."

I cannot conclude these hasty remarks without again congratulating the Wye Valley Lead Mining Company upon the quantity and excellence of their lead deposit. After all, for the present at least, the gold quartz, of which they appear to possess an excellent reserve as my assays have proved, is a minor consideration.

W. WHITE.

Laboratory and Assay Office, 25, Finsbury-place, E.C., Oct. 28.

THE WYE VALLEY GOLD.

SIR,—Nobody in his right mind would doubt Dr. Percy's accuracy in galena assaying, or anything else; but I fancy I saw the results alluded to by Mr. Gledhill many years ago, and since then a good deal of gold has been got in out-of-the-way places.

Professor White's golden spectacles are truly wonderful. His multiplying glasses are far too strong for me; but, fair and softy, it is quite possible for Welsh galena to contain 3 ozs. of gold to the ton, and a vast deal more than 3 ozs. Merionethshire has occasionally proved this.

Montgomeryshire enjoys geological conditions not very unlike Merioneth, and it is also quite possible that the strongest reason that can be given against gold being found in the Valley of the Wye is that it has not been found there. Unfound things, however, do sometimes exist, although, very often, when found will cost more than they are intrinsically worth; but this is quite a different question.

I hope the mountains of the Principality will be spared the plague of bringing forth "millions of tons of gold,"—a ton even, by way of a Welsh rare-bit, might cause a good deal of night-mare, and a question whether a Welsh pony could now be found to drag it, ton of gold is not much to look at. Being told that it was not much bigger than his Sunday hat, a man once said, "If 'tisn't bigger than that, I can carry it." That man had symptoms of gold fever. He got better though afterwards. —Oct. 27.

T. A. R.

OLD FRIENDS WITH NEW FACES.

SIR,—I observed in the Supplement to last week's *Journal* some very sensible remarks on the report of the Wye Valley meeting respecting Prof. White's millions of tons of gold. But as other remarks were made reflecting on mining by private companies in this neighbourhood—to wit, that hitherto little had been done but by private companies, and that these had not succeeded for want of capital—I beg to say I am in a position to prove that all the productive mines in this locality have been developed by private individuals (the Van not excepted), and I can point out a dozen that have been worked by public companies, and have proved failures, which is well known by parties present at that meeting, for five or six of them were under the same management as Wye Valley.

It was, moreover, stated that the Wye Valley had never been worked as a public company; this is not the case, as it was for some

years worked as West Nanty Mines, by a public company under Messrs. John Taylor and Sons, and abandoned by them, and the present machinery sold to another party, who worked it for some time, and it is the same mine that was lately tried as North Van.

Having been applied to by several parties respecting the whereabouts of Wye Valley, and to vindicate private enterprise, I am induced to trouble you to insert this letter.

AN OLD MINER.

WEST CHIVERTON MINE.

Sir,—Every well-wisher to Cornish mining must deeply regret the course adopted by Mr. Richard Clogg, the late purser. What he hopes to gain by opposing the wishes and intentions of the shareholders is something which passes ordinary comprehension. If he required time to procure evidence in rebuttal of the charges brought against himself and the late management conjointly he should have said so, and in a manner which showed he had an answer to the charges brought against them, and have made that the ground of his objection to accept his dismissal unconditionally, instead of taking his stand upon a legal technicality, which when worked out can afford him no relief. So far as the investigation has yet proceeded no denial of the charges of general mismanagement seem to have been attempted, and if there is no sufficient answer I am at a loss to see what can be gained by continuing the fight. To take shelter behind an improvised rampart, with no communication, with the certainty of being invested and ingloriously compelled to surrender, is evidence rather of obstinacy than true valour. But indiscretion seems to be a trait of Mr. Richard Clogg, not only in writing, which he confessed to the meeting, but in speaking, which he displayed at the meeting. Just as if his share of the responsibilities attaching to his own office were not enough, he unwittingly took credit for the whole in a feeble attempt to divert the shareholders. "It may be interesting," he said, "to the shareholders to know that since I have worked the mine," &c. Well, is not that very near the truth? I am sure Capt. Juleff and the other agents ought to feel very grateful to him for so far relieving them of the usual responsibilities of their respective offices, for if the returns of the mine were made at the dictation of the purser the agents could only have been mere tools in his hands, and are culpable only so far as they ingenuously submitted to his domination, which must have been of the most arbitrary kind, if, as reported, he only visited the mine once or twice a month, to pay the men, &c.

It is to be hoped that under the new regime the mine will be worked in the interest of "mining." I prefer this way of putting it to saying "shareholders," as it would seem that in the past it was worked in the interest exclusively of the then shareholders. It is also to be hoped that the parties who may be appointed to succeed the present officers will be able to effect the necessary reforms, whilst working the mine effectively. To reduce the working expenses some 2000, or 3000, per month, whilst keeping up the returns, as latterly for some short time, is not sufficient evidence of one's abilities to resuscitate and re-establish the mine. I should have esteemed the professions more highly if it had been proposed to save in one direction and apply it in another, as I cannot close my eyes to the fact that in a great mine like West Chiverton—where only 10,000, to 12,000, estimated reserves are—a great deal of dead work will have to be proceeded with, shafts sunk, levels driven, &c. Besides, if the machinery is in as bad condition as reported—"boilers expected to blow-up at any moment"—(vide the Chairman's remarks at the meeting, in which he stated that one of the boilers was so dangerous that he got out of the place as quickly as possible)—it will require a large amount to put the machinery in good working order, especially for sinking the mine deeper with economy. There is just one other remark I would like to make before concluding this letter, and that is that Mr. Clogg was not the only one person at the meeting who betrayed indiscretion; the Chairman betrayed it quite in as marked a manner as he did. If a whole catalogue of charges are to be brought against an agent, and he is not to defend himself because he is not a shareholder, his conviction may be accepted as a foregone conclusion. The Chairman certainly descended below the dignity of his position by jumping into the purser's mouth when he attempted to speak, and shutting him up by exclaiming "You are not a shareholder. I know what you are going to say, but you are not a shareholder, and are not in order." In a case of this kind, where all the force of facts and numerical superiority were arrayed on the side of the Chairman, he could well have afforded to exhibit the most generous fairness rather than to have sullied his administration by displaying anything approaching arbitrary demeanour, which at that point I cannot help thinking that he did.

MINER.

WEST CHIVERTON MINE.

Sir,—Not being present at the adjourned meeting on Friday, in London, to reply to an attack made on me by the Chairman, Mr. Smith, of York, will you permit me, through the medium of your Journal, to correct him in his unjust remarks. First, he says I should have been at the mine on the committee's visit without notice. I beg to inform him I was on the business of the mine on that day, being engaged with Mr. Clogg in getting the reports and accounts ready for the printer for circulation amongst the shareholders, and if he doubts my word I would refer him to Mr. E. G. Heard, a shareholder, and the gentleman who printed the reports referred to. Secondly, he says "They found in the office only Mr. Dunstan, the junior clerk, who did the greater part of the work of Mr. James Johns, the principal clerk, who was also a shareholder, and for whom the shareholders' proxies and votes were asked, and I had not been there since Sept. 25." I deny Mr. Smith's statement in toto relative to my duties. My colleague and myself have each our own department, and all business connected with the working on the mines goes through my hands, and is entered by me in detail in the cost-book before submitted to the purser for payment. My colleague has the receiving and delivery of near 8000 tons of stores annually in his department. Anyone who understood the working of a large mine, where 600 hands are employed, would consider this quite sufficient work for two. My name was inserted in the proxies. Capt. Juleff and myself being the only shareholders who could represent the management; the other agents are not shareholders. I am a shareholder, and have an equal right as the Chairman to attend the meeting. I returned the Monday after the meeting, held Friday, the 25th ult., and to make the most of my neglect of duty it was one day only. The Chairman further stated that he had the honour of seeing me drive through Truro the morning the committee were at the mine. I suppose I must have had the pleasure of seeing him, but not until Capt. Juleff returned from the mine was I aware of his intended visit. But I must correct him when he states I keep two horses and traps. I have never kept but one horse in my life, but have two cows. Perhaps Mr. Smith's informant in his eagerness to gain his good graces, and to secure a return, mistook one for the other. The mine being quite five miles from Truro I do not feel inclined to walk it daily, however much disposed the Chairman might be, and for this purpose I kept my horse, and not for pleasure. I am perfectly satisfied that during my 11 years' service in this mine I have given my friend, Mr. Clogg, satisfaction, and the shareholders who have often visited the mine. Mr. Smith says he intends coming down. If he will give me a fair hearing I am sure I can prove to him his assertions were unjust and undeserved.—Penarth, Truro, Oct. 26.

JAMES JOHNS.

WEST CHIVERTON MINE.

The following letter has been addressed to the Editor of the West Briton:—
Sir,—Since my return from London, I have seen in the Mining Journal a letter signed "Thomas Smith, J. C. West, J. B. Heard, committee of management," referring to the meeting held in London on Friday last, and "the strange course taken by Mr. Clogg." I did not go to the meeting with any hostile feelings or intention to obstruct the proceedings, believing I was going to meet a party of gentlemen, and that I should have received that fair play I had reason to claim and expect; but each shareholder present must have observed the hostility shown throughout; therefore, they (the committee) have no reason to complain of the "strange course" I took, as I did so only in my own and fellow-agents' defence. I should have thought the committee at least would have known the legality of my "strange course," acting, as I presume they were, under the advice of that largely-experienced mine secretary, Mr. Sharp. If not, they ought; and I say again, as I said then, that they conspired to have seen and consulted me when I would, so far as I could, gladly made their elaborate and special inspection, they ought to have adopted. It is hardly worth while to refer to that document now. I presume you saw it, but I did not until some unknown friend sent it me. No doubt it will be considered by some that it would be great presumption on my part to question the capabilities of those gentlemen (the committee of management) to carry out successfully the matter they have undertaken, although I have every reason to believe they are all gentlemen of high position. Mr. Smith, the Chairman, resides in York, Mr. West in the vicinity of London, and the Rev. Mr. Heard in Essex, the nearest more than 300 miles from the mine; and if not so far, the consequence, as, from their extreme knowledge of mining and machinery, as shown by their late inspection, which occupied them from four to five hours at the mine, involving a journey collectively, including their adviser, Mr. Sharp, within a fraction of 2500 miles, and such must be the case whenever the mine is visited; and, as the committee are now elected for 12 months, "with fancy this will form rather an additional heavy item of costs to the mine. I am very glad the Chairman intends thoroughly investigating every matter in connection with the mine. This done, and a report made, which I hope I may be

permitted to see, after that, if I find that "the majority of the shareholders have lost confidence in me, I will then throw no difficulty in the way, but quietly submit to their decision; and, whatever the result may be, you may be sure I shall always wish well to the old mine, and if I can, directly or indirectly, at any time render the least assistance I shall feel pleasure in offering it." But I must have fair play, and ask to be permitted to make explanation where necessary; and I think I shall be able to show the large amount of money, input and output considerably exceeding a million sterling, has been fairly and honestly accounted for, and this without the costs or assistance of a "committee of management."

Liskeard, Oct. 27.

P.S.—I must say I was greatly surprised to hear Mr. Smith, the chairman of the committee of management, say—"I have held 100 shares from the commencement, and I have never sold one." On reference I find Mr. Smith's name appears for the first time at any meeting on the official list in March, 1871, for seven shares; June, 1871, for 30; June, 1872, 50; Sept., 1872, 55; Dec., 1872, 60; March, 1873, 65; June, 1873, 75; Dec., 1873, 95; March, 1874, 100; and so the present time. Please insert this, as it may be satisfactory to Mr. Smith and the other shareholders. Evidently he is labouring under a mistake.—R. CLOGG.

WEST CHIVERTON MINE—UNDERGROUND MANAGERS.

Sir,—I have no interest in this concern, and never had, but have no doubt the newly-appointed board of directors are actuated by straightforward motives in recommending a change in the management. The merits of the past or future management is not the subject of the present remarks; but the marked and sweeping manner with which the whole staff of underground agents is dealt with, which conveys the idea of haste, if not over-haste. A difference of opinion may exist relative to the proper manner to manage such a mine as West Chiverton, as well as any other, and managers usually stand or fall upon the basis of their own administration. But it is unusual to connect the section of underground agents with the management, as that is a province distinct from that of the management. There being nothing that I am aware of from the published reports of the West Chiverton meetings to connect the underground agents to the management, the idea suggests itself whether the new board has not fallen short of full information on some important matters, as certainly they would not connect the section of underground agents with the management, with which the latter had probably just as much to do as the man in the moon, and are in no way responsible for it. Under these circumstances the board, with perhaps the most straightforward intention, appear to have handed out a great piece of injustice to innocent men, under the impression that they were responsible for the management, whereas they were not. Both the underground agents are men of sterling character, and as to their abilities as practical miners, they rank at the head of the list, and either of them fit to manage any mine in Cornwall; and harder-working and more trustworthy and diligent men we have not got in Cornwall, and to discharge such men for nothing is a great injustice. If the company had only condescended to consult them relative to the welfare of the concern, it would, no doubt, have been more to the advantage of the concern—every way; but to punish those able and honest men for what they are not responsible for is not right.

Oct. 29.

VAN CONSOLS MINE.

Sir,—In the report of the proceedings at the extraordinary general meeting, held on Oct. 20, and which appeared in the Mining Journal of Saturday last, the Chairman, amongst other remarks on the operations at the mine, stated it could not be said that the past results had not borne out Capt. James Roach's reports. In common with several other shareholders I am of a widely different opinion.

Notwithstanding Mr. Matthew Greene's plausible account, that the lode has proved of a variable and changeable nature—dropping off in a day from a worth of 10 to 15 tons of lead per fathom to 2—I have failed to notice that such sudden and unusual changes have been at any time referred to in the agent's weekly reports. Let anyone read these for a considerable period prior to the alteration to monthly ones, and see if these are not continued representations of the lode in the levels, winzes, and stopes, producing in the aggregate at least 30 tons per fathom. For myself I have been quite unable to see any reference by the agent to the "pipe of ore," or electrical transition of the lode, as alluded to by the Chairman, and concurred in by another of the directors. Still, judging from the sales, which have throughout fallen far short of the directors' and manager's estimates, I think there can be but one opinion entertained generally—that these statements have not been warranted by the returns which the shareholders were led to expect, nor has the usual plea of want of water, or dressing appliances, been urged in extenuation.

Now, with regard also to the barytes, of which mention has been made that there were 500 tons ready for the market, why has this not been disposed of and credited to the company? Does it so happen that an advertisement of a fortnight since, inviting tenders for 200 tons, relates to this, and is all that can at present be got of the article from Van Consols? Further, if it was known that the lode, so far as developed, was of a very unsettled nature, was it, I ask, justifiable to have incurred so heavy an outlay in such extensive dressing machinery? Better have been ruled by the old adage, "first catch your hare," or, in mining phraseology, be satisfied by the extension of levels, sinking of shafts and winzes, you have a fair prospect of a given quantity of ore being forthcoming. Van Consols has not yet benefited much by sales of ore, although the Secretary, at a meeting held on July 21, 1873, at the London Tavern, informed the shareholders that the sales henceforward might be expected to reach 100 tons per month, and also that there were 300 tons of ore at surface. At the same meeting, also, the Chairman had no hesitation in stating that the ore discovered was fully equal to the capital of the company—45,000. The 2000 reserved shares, issued in 1873, were also to bring sufficient capital to work the eastern portion of the mine (Glynn), and, from the ore opened out, pay regular dividends. How different has been the results! How suddenly the "pipe" of ore has burnt out!

Now, Glynn sett (which immediately adjoins the Van Mine) is to be disposed of, to carry on the sinking of the existing shafts deeper, and in future avoid the worthless shallow "scrabbings" which appear to have been extensively practised in Van Consols. It is sincerely to be hoped that the additional working capital, from the source named, will disclose the rich courses of lead predicted at deeper levels, and prevent a third expedient being resorted to for the purpose of raising more money.

Great St. Helen's, Oct. 28.

ROMAN GRAVELS COMPANY.

Sir,—Although I think "A Shareholder of Roman Gravels Company" attaches too much importance to Mr. Tredinnick's evidently incorrect statement, I am much surprised that Mr. Tredinnick does not explain his remarks, in common justice to the numerous shareholders of this truly excellent company. Just now mining interests can ill bear insidious attacks on its representative successes, and few mines on the market are so satisfactory to their proprietors as Roman Gravels. Yet I cannot think many will be induced to part with their shares at the present low prices (and especially with the dividend just upon falling due) in consequence of a badly-worded paragraph. It should be remembered that there are other influences than Mr. Tredinnick's misrepresentations which are depressing prices of Roman Gravels at this time. These are solely connected with market operations, and in no way reflect badly on the mine, but rather foreshadow the expected and promised increase of returns from 230 to 300 tons per month, as it is probable that capitalists are endeavouring to depress shares previous to buying up all they can get for the rise, for it is well known that Roman Gravels never paid better or promised to be a greater success than at the present moment. The speculators have thus made an opportunity which the public would do well to seize, and obtain about 13 per cent. for their money, as well as a certainty of a rise in the value of the shares, which a comparison of former with present prices will clearly prove. Roman Gravels shares were selling at 20s. when quarterly dividends were only 6s. per share; now 8s. 6d. is paid, and an increase on that is promised, and yet shares may be had at about 14½, with a dividend nearly due.

I am the more surprised that Mr. Tredinnick does not explain, as I have heard him express a high opinion of Roman Gravels—in fact, saying that it is better than Van for present purchasers, as it has not yet reached its highest point of production by a long way, a remark which is corroborated by the information elicited at the last meeting of Roman Gravels. It was stated that, meeting by Mr. Peter Watson that some experts who had visited the mine distinctly stated that the "returns should be 400 or 500 tons per month, and even more" (vide account of meeting in the Mining Journal).

"There is a time to buy, and a time to sell," and a little hunting up of the history of Roman Gravels will show the "student of investments" that this is the time to buy, unless one is a Rothschild, and can throw a thousand shares on the market, in which case, of course, he can quietly buy up when the panic consequent on such a proceeding sets in. But these are also good times for the general public, and the judicious investor can pick up shares at more advantageous prices than at other times. "It is an ill wind that blows no good," and the public can benefit by a panic and depression as well as the "bears," if they only assure themselves of the character of the investment operated on. And I am certain that, notwithstanding Mr. Tredinnick's ill-constructed (I cannot believe ill-meant) sentence, Roman Gravels will satisfy the most inquisitive and careful "disciple of investments" in this respect. I regret the occasion which has called forth these remarks. MEDICUS.

Walsworth, Oct. 24.

EBERHARDT AND AURORA MINING COMPANY.

Sir,—The battle of the sphinxes has now assumed an altered aspect. Mr. Ridsdale, once our chairman, after a protracted engagement, resigned in favour of Mr. De Pass, and the inaugural ceremony was accompanied by an energetic appeal to the shareholders to support with their capital the new and amended regime. The scientific administrator had completely failed to produce any substantial evidence of the commercial value of the mines which he represented—

indeed, proved to be "wondrously rich"—and the irrepressible De Pass would initiate a truly commercial policy: the shareholders were to be no longer delectated by abstruse but visionary dissertations of the exceptionally valuable nature of the produce of the mines, but instead thereof to receive substantial tokens in the shape of dividends. What science had tried, and had not accomplished, an experienced commercial man would soon realise. The latter has had an unbroken sway, but like its antagonistic predecessor has collapsed—not from want of promises, but in results. Again, phoenix-like, science is to replace commerce. De Pass retires with a commendable meekness strangely contrasting with the flourish of trumpets with which his acceptance of office was heralded, and it is now understood that "if applied to Mr. Ridsdale will resume the position he once occupied." But ever-potent science requires further capital! How long are we to be thus dallied with?

Oct. 28.

A SHAREHOLDER.

UTAH MINE, AND ITS MANAGEMENT.

Sir,—I think it must occur to the shareholders in Utah Mine that Mr. Longmaid has taken an ungracious course (to say the least of it) in leaving the mine till he had given the directors an opportunity of appointing some one to fill his place if they thought it prudent to do so. And I think it must also appear to those who are interested in the property that whereas captains of mines are too prone to make the work appear the better side, Mr. Longmaid, since he began to use the dressing machinery, has reversed the rule of his class by making the better side appear the worst. One can scarcely believe that the gentleman who wrote the letter which appeared in the Mining Journal of Dec. 13 is the person who wrote the letter appearing on a later date—assuming he fully understands his business as a miner, because, in the one of the former date, he uses a very inflated style, and writes of what the Utah Mine is in excellence compared with the Van Mine, and how much better it would have been for "A Large Shareholder" to pay his calls than give an opinion about his management.

On reading Mr. Longmaid's letter, in which he refers so pointedly to "A Large Shareholder," I thought how out of place it would be for any agent of a foreign merchant to write home to his employer, telling him to pay his debts instead of interfering with him. Mr. Longmaid's remarks were very much like that, for I suppose he must be taken as the servant of the shareholders so long as he receives their money.

"Discharge me and all the men," he writes home in one of his letters; but why so anxious to be discharged? It is an ugly sentence, and should be further explained. Mr. Longmaid should recollect we have spent, or there has been spent, nearly all the 25,000, which the two calls on 14,000 shares had realised, that the directors had only a few hundreds left out of that large sum, and if they refused to remit him 1000l. it was because he had not left them that amount to remit. To charge the board with delay upon delay is most unfair, seeing that in all instances they remitted to him as quickly as their resources would enable them. I am totally unconnected with the directors, and have no personal knowledge of them, but if I had been their intimate friend I should have said—You give your agents at the mine too much liberty, and inform them too much on pecuniary matters; they have no business to know whether calls are paid up by individual shareholders, nor to involve the adventure in such liabilities as Mr. Murphy contracted, nor allow themselves to be left by Mr. Longmaid as by his own showing he intends to leave them. If Mr. Longmaid can legally walk off as he proposes to do the directors must have made a sorry lame agreement when they engaged his services. I think this has been the weak point with the board, and in granting them all the credit they deserve for the candid and manly way in which they are now conducting the unfortunate business, I would say to them—Act upon the report of an honest man, if such a person is to be found in Utah, and learn from him whether the property is really worth more money spending about it. Mr. Longmaid had suggested letting the dressing machinery to another company. This sounds like abandonment of the ground, leaving it to be taken by some new-fledged adventurers when the present shareholders have been kicked out of it, and then to learn that the mine is better than ever it was represented. Such are my impressions, and such, I believe will be the impression of many whose money has been so ruthlessly sacrificed.

A SHAREHOLDER.

[For remainder of Original Correspondence, see to-day's Journal.]

Meetings of Public Companies.

GOVERNOR AND COMPANY OF COPPER MINERS IN ENGLAND.

An extraordinary general court was held on Wednesday at the offices, No. 27, St. Martin's-lane, Cannon-street, "for the election of a deputy-governor, in the room of Mr. Charles Gilpin, M.P., deceased; and also, in case of need, for the election of one assistant." The chair was occupied by Mr. ALEX. BEATTIE, J.P., the governor of the company. The notice calling the meeting was read by Mr. THOMAS R. STEER, the secretary.

The CHAIRMAN said: Gentlemen, the cause of this meeting is the lamented decease of our friend and colleague, Mr. Charles Gilpin, M.P. I will read the resolution which was passed at the Court of Assistants' meeting on Sept. 10 last, on the receipt of the intelligence announcing his death. "That this court, having to-day received the intelligence of the decease of their friend and colleague, Mr. Charles Gilpin, M.P., desire to express the regret which every member of the court feels at the loss which the company has sustained by this sad event, and they desire to express their deep sympathy with the widow and family of Mr. Gilpin in their bereavement." That circumstance compels us to elect, in Mr. Gilpin's place, a deputy-governor, and I have to move "That C. Rice Mansel Talbot, Esq., M.P., one of the assistants of the company, be elected as deputy-governor in the room of Mr. Charles Gilpin, deceased."

Mr. WHATMAN seconded the resolution, which was put to the meeting, and carried unanimously.

The CHAIRMAN then moved that Mr. William Dillworth Cressdon, jun., be elected as one of the assistants of the company in the place vacated by Mr. C. Rice Mansel Talbot, M.P.—Mr. J. WHATMAN seconded the resolution, which was put to the meeting and carried.

A vote of thanks to the Chairman and directors closed the proceedings.

AUSTRALIAN CENTRAL GOLD MINE COMPANY.

The adjourned ordinary general meeting was held on Wednesday last, at the offices of the company, Austinfriars, Mr. WINGROVE in the chair.

The CHAIRMAN said that on the previous Wednesday it was the wish of some of the shareholders that the meeting should be adjourned, in order that, as the mail was expected in in a day or two, they might have an opportunity of seeing any further accounts which might be received from the mine. The mail did come in, and brought a letter from Mr. Gill, dated Sept. 11, but in the letter there was no fresh information with regard to the mine, and nothing beyond a recapitulation of what was stated in his previous letters. He regretted to say that Mr. Gill had neglected to put a balance-sheet in the letter, but by the aid of a copy of the cash-book the directors had roughly ascertained that the liabilities were what he had stated them to be on the previous occasion—about 1200l.

Mr. PROCTOR: That is up to the present time? The CHAIRMAN said it was up to Sept. 11, but as the directors had recently sent out 100l. (which would pay for the pumping) he did not suppose that any liabilities had accrued there since.

Mr. PROCTOR asked whether the amount included the liabilities in this country? The CHAIRMAN said the liabilities in this country were 544l., but there were assets to meet that amount. He went on to say that the shareholders had not responded very freely to the circulars which had been sent round to them, the directors had only received applications for about 400 shares, but 500 or 600 more applications had been made conditional on the whole of the 3000 shares which were required being subscribed for. He did not know of any course to get subscriptions which the directors had not already adopted; as to appealing to the outside public, it would be merely throwing money away. If the shareholders would not find the money they must abandon the undertaking, and in that case he would ask the shareholders what was the best course to be pursued? If they made up their minds not to find the money the next consideration was how to dispose of the property to the best advantage. Of course he need scarcely say that those gentlemen who had just paid money on application for shares would have their money returned to them in the event of the concern not being proceeded with.

Mr. PROCTOR: I understand there are only 900 or 1000 shares applied for out of the 3000?—The SECRETARY said that was so; he also added that the circulars were not sent out till the previous morning, and applications for 300 shares came in by that morning's post, and possibly if a little more time was given more applications might come in.

The CHAIRMAN, in answer to a further question, said that no doubt 3000l. would secure the company out of its difficulty. To drive to the level would not cost more than 1000l. or 1200l., and when the work was accomplished there was every probability that sufficient gold would be got to pay the mortgage debt. At the same time he could not recommend the work being carried forward with the amount of subscriptions already obtained.

Mr. RAIT said that if 30 shareholders subscribed 100l. each the necessary sum would be made up, and he should be happy to subscribe 100l. provided other gentlemen did the same.

Mr. WILLIAMSON: The question is whether you can get the other shareholders to do it. Mr. RAIT said he believed if the money was subscribed it was a fair mining venture, and that the thing would be a success. At the same time the whole amount necessary must be subscribed, so that the directors would have something substantial to go on with. No one or two shareholders could be expected to subscribe whilst the others stood aloof.

The CHAIRMAN said there were about 60 shareholders, and the question was whether a sufficient number would come forward to raise the money. He believed there was about 900l. of plant upon the mine, and it would be suicidal to allow the property to be sacrificed.

Lieut.-Col. WELLS said he would subscribe 100l. if three or four other gentlemen would do the same, if that would be sufficient to tide the company over its present difficulty.

The CHAIRMAN said he was afraid the smallest amount required would be 2600l. at the least.

Lieut.-Col. WELLS said he had heard of some new process of treating the ore, by which there was a large saving of quicksilver, and also economy effected in other ways. The CHAIRMAN said that no quicksilver was used in the treatment of alluvial gold mining.

Some further discussion ensued, and the unanimous feeling seemed to be that

a further attempt should be made to raise the money necessary, and eventually several gentlemen in the room agreed to put down 1000. apiece, on condition that the other shareholders came forward and completed the sum required—30000., and it was agreed to send a further circular round to the shareholders, informing them of the decision of the meeting, and asking them to co-operate in raising the necessary funds. A paper was signed in the room making 1145 shares taken, provided the whole 3385 were subscribed for.

The meeting was then again adjourned, to await the reply of the shareholders.

WICKLOW COPPER MINE COMPANY.

The half-yearly general meeting of shareholders was held at the company's offices, Grafton-street, Dublin, on Oct. 23, Mr. R. W. KELLY in the chair.

Mr. T. BAKER (the secretary) read the notice convening the meeting, and the reports of the directors and auditors were submitted.

The directors congratulated the shareholders on the working of the mines for the half-year ending Sept. 1, for—nothingwinding the great business existing in the trade of both Europe and America—a business most seriously affecting the demand for sulphur, copper, and iron ores, and their product—the quantity of ore actually delivered to customers at fairly remunerative, though not high, prices bears a favourable comparison with any of the corresponding half-years since 1870. A great deal of this is owing to the continued productiveness of the iron ore deposits. At one time this company's sole marketable product was copper ore. Its sulphur pyrites was not saleable at any price. Then arose, through improvements in the manufacture of sulphuric acid, a great demand for sulphur pyrites, and with increased prosperity to the country. Later, the keen competition for the supply of sulphur ores has, to some extent, lowered the price of these ores, but with this has come a demand for the iron ores, which but a year since were unknown, and thus the total amount of ore deliveries has not been so seriously affected. From the manager's report, which is annexed, it will be seen that the mines are in the best condition, and capable of yielding, when a revival of trade takes place, greatly increased quantities of ore. The completion of the shaft in the south mine has made available a considerable quantity of good copper pyrites. It will be also seen that our iron ore deposits are much larger than was originally suspected, the newly-discovered iron lode having been now tested both as to its depth and width. Every means has been used to keep the working expenses of the mine within moderate and safe limits, and the mine itself in that condition that it may be able to yield what may be demanded from it at any notice; and the manager at the mine has most efficiently carried out the directors' wishes in this matter. No sufficiently good offer has as yet been made to the board for the Arklow Chemical Works; but as trade revives offers may be expected, as there can be no doubt but that these works are very favourably circumstanced for the manufacture of sulphuric acid. The works are being maintained in a proper condition for sale. From the accounts it will be seen that 30000. worth of the debentures have been redeemed. It will further be observed that the assets in hand are more than sufficient to redeem the remainder of the debentures when due, and that the net profit on the mine account, were it not absorbed by the interest account and the depreciation account of the Arklow Chemical Works and other such exceptional charges, would amount to about 5 per cent. on the present capital of the company.

The auditors reported—"We have examined the account submitted to us, and find it substantially in conformity with the books as laid before us; but, having regard to the objections made in our former audit as to the manner in which the accounts were kept (the same method being continued in the present half-year), although we pass the accounts as auditors, we do it only on the understanding that the accounts will be kept in a more correct manner in the future, and that the working of the mine will be more economical. They then proceed to give their reasons, which, however, are not worth referring to, as they appear to be merely based upon Mr. Walshe's notions, which are certainly unique, of what accounts should be; thus the auditors complain, because the mine does not get credit for ore broken but not raised. The report was signed by John Walshe and William Archer, so that the Chairman was, of course, compelled to refuse Mr. Walshe permission to amend the report in the absence of his co-auditor.

The CHAIRMAN, in moving the adoption of the reports, said the auditors' report was not received at the time the directors issued their report. As to the request to supply an omission in the auditors' report, he said that Mr. Walshe had fourteen days to prepare the report, which was sent in on the previous night, and it could not now be amended in the absence of Mr. Archer, the other auditor. He then formally moved that the directors' report be received and adopted.—Dr. WRIGHT seconded the motion.

Mr. WALSHE said when he undertook the duty of auditor he did so on the understanding that he should be permitted to make a current audit. The accounts were very troublesome to examine. As to the keeping of the accounts, they could not be kept nearer as a matter of clerking, but they were arranged in a way that he did not think the shareholders could understand. Mr. Walshe proceeded to criticise the accounts at some length. He said they should be well pleased, so far that the mine, distinguished from the chemical works, was prospering, for the sum of 1563. 19s. could be placed honestly to the credit of the mine. (Hear, hear.) He regretted that they could not make a dividend; still, it was gratifying that the mining operations were recovering themselves. He complained that too liberal allowances were made for short weight, and that there had been serious neglect on the part of the board in not having delivered more of the ore under contract than they had done. There were 5000 tons undelivered on the foot of one contract, and 10,000 tons on the foot of another.

Mr. ALLEN said Mr. Walshe's observations seemed to suggest that they should have a new system of book-keeping. A new system had been recently introduced, and to upset it now, unless for some good reason, would be very undesirable.

Mr. WALSHE said he did not want anything but business characteristics in the system of book-keeping which they had.

The CHAIRMAN explained as to the allowance for short weight. There were not the means at Arklow of weighing the iron ore which was shipped there, and a certain amount of waste should naturally occur occasionally. When the vessels arrived in England a deficiency was ascertained. This was on an average of 1½ to 2 per cent. on the quantity shipped. (Mr. Walshe: 3 per cent.) This waste was a matter which they could not avoid. The directors were as well aware of the loss as their auditor, and they had taken every precaution to bring the loss down to the minimum, and from experience he could say that, considering how the stuff had to be shipped, the loss was by no means large. Mr. Walshe had brought a serious charge against the board for neglecting, as he said, to take steps to deliver contracts. The explanation was that, owing to the crisis, the iron and ore trade in England had been in a very disturbed state, and one of their oldest customers wrote to them to say that the shipping of ore should be suspended, as the colliers had gone on strike, and that the iron and ore trade had come to a standstill, and that until trade righted itself they would be unable to take the delivery of the ore. The directors had no option in the matter, and so it happened that 10,000 tons of ore had not been delivered. (Hear, hear.) If trade had gone as they anticipated it would, and if their contracts had been delivered as they had a right to expect, the profit on the mine would have shown nearly double what the report now showed; but these were matters over which the directors had no control.

Mr. WALSHE asked what was the date of the letter referring to the contract of 10,000 tons?—The CHAIRMAN said the directors made the statement on their own responsibility, but they would not bring forward private letters of customers before a public meeting. Any shareholder who desired to learn such matters of detail would get all information on applying to the secretary. Referring to the mode of keeping the accounts, he said that the shareholders were aware that a committee of investigation, with a public accountant, devoted considerable attention to the question. The form of the accounts had been altered, and they were now the result of the combined intelligence of the committee of investigation and the public accountant. As to the condition of the property, the directors regretted that they had not been able to dispose of the chemical works at Wicklow during the past half-year; but they had taken every means to make public the fact that they were in the market. Some parties had looked at the property, and they had had an offer of about 90000., based upon a break-up price—that was to say, to break up the works, and send them to England. That offer they could not entertain. (Hear.) The directors would not lose sight of the desirability of placing these works in the hands of some parties who would keep the concern on as a manufacturing concern for the making of manures, for which they believed they were well adapted. The directors had every hope that the works would be taken, sooner or later, by some parties for carrying on the manure business there, and if so such parties would be large consumers of the silver ore. The works were kept in a perfect state of repair, at a cost of not more than 30s. a week, so that the directors could afford to bide their time, and wait for a suitable purchaser. Referring to the mine itself, he said the profit and loss account showed that for the past half-year the mine exhibited a profit of 11000. Under more favourable circumstances it would be considerably larger. The mine now stood in a position it had not occupied for years. There were assets in hand sufficient to redeem the debentures, and next half year the mine would be in the position of not owing a shilling, and having ample capital in hand to carry on the concern. The mine had been maintained in the most perfect state possible. The output of the silver ore was to the full extent that it was capable of, and the iron ore could be delivered in larger quantities than ever. The directors could not control the markets, but they were very successful in the past half-year in finding markets for the ore. If the iron trade in England should settle down on a fair basis (as no doubt it would) they could resume the shipping of iron ore on a larger scale than heretofore. As to silver ore, they had to meet the great competition of the Spanish ores in the market, but the delivery of silver ore had been as good as, under the circumstances, could reasonably be expected.

Mr. WALSHE considered that they should be very cautious how they parted with the Arklow Works. He saw in the books cause sufficient to justify the loss that had been sustained by them. It might be better to see if they could not work them themselves by proper management.—The report was then put and adopted.

The outgoing directors—Messrs. Thos. Worthington and Arthur Andrews were re-elected.

Mr. WALSHE thanked the shareholders for the confidence reposed in him as auditor, and now begged to resign the position.

Mr. Richard Wilson and Mr. J. L. KELLY were elected auditors.

Mr. WALSHE thought they were going too fast. Mr. Kelly was a creditor of the company, receiving a large sum of money for sales, and he (Mr. Walshe) questioned, on principle, if he was the man to appoint as auditor.—The CHAIRMAN said Mr. Kelly had now been elected.

A SHAREHOLDER said that after what had been said it was anomalous that one of the largest creditors should be elected an auditor.—The CHAIRMAN said Mr. Kelly was present, and would answer for himself.

Mr. KELLY said he had been asked twelve months ago to dispose of the produce of the Arklow Works, and he did so. Further than that he did not understand what was the meaning of Mr. Walshe's observations. He believed the produce that he sold had not been fully developed, but any transactions he had with the company were above board, and for the benefit of the company. He did not want the position of auditor, and he thought the observations of Mr. Walshe uncalled for.

The CHAIRMAN said as soon as Mr. Kelly was put in his commission on all the shares delivered there was an end of the transaction, and he was not the recognised agent of the company. He (the Chairman) believed that Mr. Walshe acted as he considered right, and, therefore, he would propose a vote of thanks to the late auditors of the company.—Dr. WRIGHT seconded the motion, which was adopted.

Mr. WALSHE thanked the meeting on his own behalf.

Mr. FENNELI intimated his intention to move that the remuneration to the auditors should be three guineas instead of five.—Mr. WALSHE thought the suggestion came with special bad grace from Mr. Fennell.—Mr. WILSON protested

that the suggestion was most unbecoming, and was a breach of faith with the present auditors. He would resign his appointment.—Mr. HUGHES said no one in the room agreed with the suggestion.—Mr. FENNELI withdrew his proposition. Mr. WILSON spoke in favour of the terms of the condition and prospects of the mine. Dr. WRIGHT having been called to the second chair, a vote of thanks was passed to Mr. Kelly, and the proceedings terminated.

SOUTH GREAT WORK MINING COMPANY.

The general meeting of shareholders was held at the company's offices, Gresham Buildings, Basinghall-street, on Wednesday, Mr. J. L. GODDARD in the chair.

Mr. GRANVILLE SHARP (the secretary) read the notice convening the meeting and the minutes of the preceding one, and the statement of accounts for the twenty weeks ending Sept. 12, showing a debit balance after charging the thirteenth month's cost of the sum of 1143. 0s. 1d., together with the agent's report, was submitted:—

Oct. 27.—In handing you my report for the general meeting, you will observe from the details therein that the mine has materially improved, principally in the bottom levels, which is of the utmost importance, as they are going into new or unexplored ground. The engine-shaft, you will notice, by a reference to the plan, has been sunk on the course of the old Great Work lode, where, from a mine by that name adjoining, more than 1,000,000. worth of mineral has been sold. The 20 fms. level below the deep adit has been driven a total length of about 59 fms., the distance westward is 43 fathoms, where the lode has improved, and is now 2½ feet wide, worth 15s. to 18s. per fathom. The rock formation has considerably changed in the last 10 fathoms driven, and is now composed of a fine light-coloured clay-slate, with a quantity of oxide of iron, which makes the lode and water of the deepest red, which is similar to those of the largest producing mines in this county. The 10 fms. level has been driven west of engine-shaft 84 fms. In this drive good tin ground has been opened up for over 30 fms. in length; the lode in the end is composed of chlorite, quartz, and worth 10s. per fathom for tin. A winze is being sunk below this level in a lode 6 ft. wide, which is worth 18s. per fathom. Six men are engaged here, and six men are also working the back of the level, at 10s. in 11. You will observe by the plan that the before-mentioned winze is 9 to 10 fms. in advance of the 20 fms. level, and seeing the lode has continued valuable for tin direct from the adit, it is my opinion a very valuable lode will be found between the winze and the end referred to. I would call your attention to the necessity of bringing down the Derry shaft, which has been sunk to the adit, and by sinking it to the 20 will greatly facilitate the future working by ventilation and discharge of stuff.

Flat-Rod Shaft, Orchard Lode: This shaft has been sunk to the 35 on the course of the lode, and the 35 cast has been driven 29 fms.; the lode has varied from 2 to 3 ft. in width, and is worth 9s. per fathom. The western drive has been driven 6 fms.; the lode yields tin stuff for stamps. A rise is being put up in the back of the level, and is worth 10s. per fathom. Preparations are being made for sinking the shaft below this level. The 25 has been extended a total distance of 64 fms.; the lode in the east end is 3 feet wide, and is opening tribute ground. A winze below this level (the 25) is being sunk at 15s. in 11. The 15 fathom level has been driven 50 fathoms, and is now suspended. On reviewing the present prospects, I consider that the mine has recently much improved, and that it was never so promising, especially in the western ground on the Great Work lode, and near the junction of the Perran Downs lode, and I consider, with the return of former prices for tin, the costs would now be met and profits made. The returns of tin in the past four months have exceeded those of any former time, and more than the estimate given at the general meeting. Owing to the dry weather during the summer months, our stamps had to be worked by steam power, which necessarily caused an increase of cost in the consumption of coal, whereas during the winter a sufficient quantity of water may be expected to work at least 16 heads of stamps.—SAMUEL J. REED.

The CHAIRMAN remarked that their tin sales had been about 14 tons, realising 716. 3s. 6d. This was a considerable improvement upon the previous four months' sales, which were but little over 8 tons. The charging of the thirteenth month's cost made their accounts appear more unfavourable than they really were, and he thought the plan adopted in some mines of holding the meetings every sixteen weeks, to correspond with the pays, was a good one.

Mr. SHARP suggested that they might estimate one week's cost, and add it at each meeting.—Captain REED said that they were charging the extra month's cost against the four months' returns; otherwise they would have shown a much more favourable statement. In Cornwall the system of charging a proportion of the extra cost at each meeting was much extending, and gave greater satisfaction to the shareholders.

Mr. SHARP, in reply to a shareholder, said that he feared some of the amounts standing as calls in arrears were incorrect. He thought that in all about 205 shares were in arrears, and should be foreclosed at the next meeting; but, speaking generally, their arrears of calls were in a more healthy state than they had been for some time past. There were at present 3000 shares upon which calls would be paid.

Mr. CHAPMAN remarked that, although this rendered a larger call necessary, the shareholders had the equivalent, as the reduction of the number of the shares increased the value of the remainder.

The accounts were then received and passed.

Capt. REED, in explanation of his report, and in reply to shareholders, stated that he always had the idea that in the western part of the set they would get the best ground. If they put down the Derry shaft it would not be necessary to lay flat-rod, the shaft was merely required for ventilation and for drawing stuff, and this would be done with a whim. The present price of tin is about 54s. or 55s. He thought their next sale would be fully equal to the last, and there might be some increase beyond that.—Mr. CHAPMAN thought that if the sales were the same as in the last three months they might well congratulate themselves.

Capt. REED said the smelters with whom he had spoken were of opinion that by March or April month they might expect a permanent increase in the price, as there would be a diminution in the stock of Australian tin in the market. They had not been working the mine unfairly. Their reserves were as fair as could be in any young mine.

The report was then unanimously received and adopted.

Mr. CHAPMAN thought great credit was due to Capt. Reed for the manner in which he had conducted the operations of the mine, and that they must not forget that he had more than fulfilled the promises he had made at the former meeting.

A call of 7s. per share was then agreed to, and thanks having been voted to the Chairman and secretary and to Capt. Reed, which were suitably acknowledged, the meeting separated.

WEST GREAT WORK MINING COMPANY.

The statutory meeting of the shareholders was held at the offices on Thursday to comply with the requirements of the Companies Act, 1867. Also to select and appoint a shareholder to serve on the direction in the room of Capt. Arthur Henry John Johnstone, deceased.

Mr. W. A. RIPLEY in the chair.

Mr. GRANVILLE SHARP read the notice convening the meeting. He said the meeting, as explained in the notice, had been called in compliance with the provisions of the Companies Act. In this case the company was a successional one, the former company having been carried on under the Cost-book System, which was agreed should be wound-up voluntarily at a special meeting held on April 8, which was confirmed at a subsequent special meeting held on April 22. A liquidator was appointed, and instructions given him to prepare and carry out the reconstruction of the company upon terms set out in the special resolution then passed. Only two dissentients were lodged, one of which had since been withdrawn. A contract of sale in accordance with the special resolution was duly made and registered with the Memorandum and Articles of Association. It was provided that the company should have a capital of 15,000., and that the directors should be required to allot one moiety of 10,000. shares of 1s. each in the first instance to several shareholders in the former cost-book company, such shares to be credited with the sum of 15s. per share, and that in respect thereto such allottees should only be liable for 5s. per share. The remaining shares were offered in the first instance to the several members pro rata to the number of shares held by them on the terms specified by the Memorandum of Agreement; up to the present time 12,307 out of 15,000 have been taken up. With regard to the present position of the mine the resident manager was present, and would give any explanation that any member might require. The manager then read the following report:—

Oct. 27.—In handing you a short report for the meeting, to be held in conformity with the Companies Acts, perhaps it will not be ill-timed in giving you a few particulars as to the position and future prospects of the mine. The property comprises a large area, which has been taken in two sets, at an easy royalty of 1-24th for 21 years. The mine is situated on the western slope of the granite ranges at the Godolphin and Tregoning Hills, and identical as to position with the largest producing mines in Cornwall. The lodes, of which there are several, are embedded in the clay-slate formation, which in the mines adjoining have produced tin and copper to the extent of millions sterling. In No. 2 lode, which is being driven on both east and west of the Tregoning shaft, the latter drive has continued to improve, and the lode is now worth 14s. to 15s. per fathom. The east end opens tribute ground. It will be necessary to put out a cross-cut further west, as it is evident this lode has been missed by the old workers, probably hundreds of years since, its direction being on the south of the level for a considerable distance.

Pollard's shaft has recently been cleared, and rich samples of tin have been broken from the north lode; this is a point of much interest, and should be vigorously developed. A winze has been commenced on the Great Work lode, and we have just drawn to surface a good pile of lode-stuff; and I think, when communicated with a deeper level, we shall be in a position to raise large quantities of tin-stone. I purpose extending the level on to No. 2 lode, west of skip-shaft, where the junction of the Croft Gethal lode will be met with; this is a speculation in itself worthy of vigorous development, and any day may prove of sufficient value to remunerate the shareholders for all their outlay. A new shaft will have to be brought down on this point for ventilation, &c.; but the ground is of such an easy description that a short time only is required to do it. I look upon this property as one of the best in the district, and, with ample machinery erected for all requirements, good returns of tin will soon be made.—SAMUEL J. REED.

Some very rich specimens of tin stones were exhibited, taken from the recent discovery referred to in the report.

Capt. REED stated that the rich stones of tin on the table had been taken from a depth not exceeding 15 fathoms.

The SECRETARY said it was well-known that the Breage district had been one of the richest for tin in Cornwall, and West Great Work seemed likely to prove another of its successes. It was important to note that the Great Work Mine was about to be resuscitated, having recently been purchased by Capt. William Teague.

Capt. REED said the Great Work lodes were parallel to those in West Great Work, but the latter had one of the counter lodes of the former. Active preparations were now being made preparatory to forking the water.

The SECRETARY said it was his painful duty to inform the shareholders of the death of Capt. Johnstone, necessitating the election of another gentleman as director. The directors would have made the election, but thought it better, as this

meeting was to be held, to leave the question entirely in the hands of the shareholders.

Upon the proposition of Mr. HENRY GOULD SHARP, seconded by Mr. Buzoat, it was unanimously resolved to elect Mr. H. H. HILTON as director.

Mr. HILTON, in acknowledging the compliment, assured his fellow-shareholders that he would do all in his power to assist in promoting the success of the enterprise, and he hoped they would make a great work.

It was resolved that the remuneration of the directors be 1000. per annum. A vote of thanks to the Chairman and directors concluded the proceedings.

PRINCE OF WALES MINING COMPANY.

A general meeting of shareholders was held at the offices of the company, St. Michael's House, St. Michael's-alley, yesterday, Mr. J. Y. WATSON, F.G.S., in the chair.

The SECRETARY (Mr. Jehu Hitchins) read the notice convening the meeting.

The CHAIRMAN said he would not trouble the meeting by having the accounts read at length. It would suffice if he stated just the heads of the balance-sheet, for from that information the shareholders would be able clearly to understand the financial position of the company. Their balance of liabilities over assets was 711. 11s. Then there was cash in hand to the amount of 6200., and an ore bill due next month to the amount of 6690. But before another sale of ore could be effected certain liabilities would have to be met. For instance, the cost-sheet due next week amounted to 4000., a bill due to Messrs. Vivian to 2000.; these, with other items, made up a total of liabilities, and which would have to be discharged before the next sale of ore could be made, of 16200. 10s. 9d. Against which, as he had pointed out, there were assets amounting to 12980., thus leaving a deficiency of rather more than 3000.

The SECRETARY (Mr. J. Hitchins) then read the report of the agents, Messrs. J. Gifford and J. Pryor:—

Oct. 25.—Since the last general meeting the 77 east has been driven 8 fms. 3 ft. 6 in., lode varying from 1½ ft. to 2½ ft. wide, producing occasional stones of ore. In the present end it is 1½ ft. wide, composed of capel and quartz, with spots of copper ore intermixed, and the ground more favourable for progress and the production of copper ore. Here we are getting near the cross-course that the one was found east in the 65 fms. level. The 65 east has been driven 6 fms.; lode varying from 1 to 2 ft. wide, composed of capel, peach, and quartz, with a little malleable and copper ore intermixed, but not to value. About 2½ fms. behind the end, a lode underlying north crossed the main lode at the point of junction in the back of the level. Both lodes are small, but in the bottom as they diverge east the lode appears to be increasing in size, and producing stones of malleable and copper ore. About 2 ft. behind the present end a small cross-course has been driven through, which contains a little malleable copper; 22 fathoms behind the above end a cross-cut has been put out north in search of more lodes, but as yet nothing has been met with. In the back of the above level, at the highest point where the lode becomes poor (as can be seen by the plan), we are putting up a cross-rise, where the lode is 1½ ft. wide, of a very promising appearance; and as it is all whole ground to surface, and about the same depth where the best deposits of ore were found in the western part of the mine, we strongly recommend the rising being continued.

Tribute Department: We have eight parties, working by 26 men, at an average tribute of 11s. 9d. in 11. Silver lode still poor. In conclusion, at the last general meeting we had hoped to intersect the cross-course and get into ore ground in the 77 east ere this, but the ground being more spare for progress, that end has not been attained; but as the ground in the end is precisely of the same character as in the level above, near the cross-course, we hope soon to reach the desired point. In the 65 east all the lode has been poor for a short distance; we think it only temporary, through the influence of the two lodes and cross-course; and as they diverge, and from the promising character of the ground, there is every reason to expect an early improvement at this point. We hope to sell about 100 tons of good quality ore for the coming two months.—J. GIFFORD, JOHN PRYOR.

On the motion of the CHAIRMAN, seconded by a SHAREHOLDER, the accounts were unanimously approved and passed.

Mr. LANDAU said before they proceeded further he had something to say concerning this matter. He, being on the committee of management, was very much dissatisfied with the way in which the mine had been worked. His experience taught him that Cornish mining was no more than making calls upon London shareholders; while he found, moreover, that the men who worked the property on tribute realised small fortunes therefrom. The management, he considered, was very much to blame for this. Still, it was impossible, with their limited amount of information, to come to any definite conclusion on the matter—the men might have made the discovery themselves. He thought the whole affair should be thoroughly sifted. And, in the view of ensuring more satisfactory management in the future, he was going to propose that a gentleman should join the committee who held 500 shares; he was, moreover, an influential man, understood mining, and took a deep interest in it. He resided in the neighbourhood, and was near the place at this moment. He begged to propose that Dr. Thomas Clark be appointed a member of the committee.—This, on being seconded, was put and carried.

Mr. LANDAU next proposed, for he said that they could not have too many, that Mr. Henry Phillips, who was a very large shareholder and took a great interest in the concern, should also be appointed a committee man.—This was then seconded and carried.

Mr. LANDAU said with regard, in the next place, to a call. The company was 711. to the bad. He had always been in favour of having as much money as possible wherewith to carry on the concern, and he had no doubt that a call was now required; but at the same time he thought that in justice to the shareholders something more definite should be placed before them before they resolved upon calling up further capital. They were told that day by their agents that in four months they had driven 8 fms., and that at a most important point and after the promise had been given that rapid progress should be made. He was determined that the whole matter should be enquired into thoroughly, and with such men as Dr. Clark and Mr. Phillips upon the committee the shareholders might rest assured that that would be done. It was absolutely requisite that resolute and energetic action should be taken; that, for instance, a new engine should be put up. This they had always been told would cost 50000., whereas he was convinced it might be erected for 8000.

A SHAREHOLDER expressed his belief that it would be of great advantage to have practical men at the head of affairs. He thought there was really something in the mine if properly worked.

Mr. LANDAU explained that the reason he had proposed Dr. Clark was this. Dr. Clark was a very clever man, and this new process could be adopted with the greatest possible advantage at the Prince of Wales Mine. (Hear, hear.) But before they went to the necessary expense of erecting the works required for that process they must have an engine which would enable them to go deeper down into the mine, which they could not do at present. The 90 appeared to have proved at the time it was worked very remunerative ground; the value of the lode being then worth 23s. per fathom, but which had to be abandoned simply because they could not go sufficiently low down.

Capt. GIFFORD said he had never reported it as worth more than 18s. per fathom, and that had been when tin was worth 80s. per ton. The captain's report of the date in question was produced, and his statement verified.

The CHAIRMAN said, with regard to the new process, that there was no doubt it would answer anywhere, it would answer at their mine.

Mr. LANDAU, after some further desultory discussion, begged to propose "That the committee be requested to convene a meeting of shareholders at an early date for the purpose of taking into consideration the further working of the mine, and the appointment of a committee, secretary, and other officers of the company, and for doing all such matters and things in respect thereof as the said meeting may determine."

Subsequently, at the suggestion of a shareholder, the following addition was made:—"And that they produce at that meeting a report on the present position, and future prospects of the mine." The resolution was then in that form put to the meeting and carried.

Mr. LANDAU said that lead from the Prince of Wales Mine had been sold in the market, and in point of quality would compete with the produce of any lead mine in the world, the only drawback had been that of quantity, and therefore the duty of the committee would be to ascertain in what way the development of the mine could be best promoted; so that the wealth they felt convinced it contained might be speedily handed over to the shareholders. (Hear, hear.)

The proceedings closed with the usual compliments.

NORTH HENDRE LEAD MINING COMPANY.

The fourth annual ordinary general meeting of shareholders was held at the company's offices, Westminster Buildings, Chester, on Friday, Oct. 23.—Mr. H. R. BOWEN, Chairman of the board of directors, in the chair. The notice convening the meeting was read, and the printed reports and accounts, which had been sent to each shareholder, were taken as read.

The CHAIRMAN, in moving the adoption of the reports and accounts, said that he had very little to add to them, the general character of the points at the mine having remained unchanged. The statement of accounts shows that the mine is very economically worked, the cost of coal for the year being only 27. 12s., and the total expenditure being less than 50 per cent. on the gross income. Capt. Lean in his report states that his "opinion of the mine as to its future permanence was never stronger than at present," and this morning a further report had been received from him, where he states that the mine yielded day "presented a much improved appearance." With reference to the new scheme, it is now proposed to apply for an Act of Parliament to carry out the object, so that compulsory powers may be obtained, and for that purpose it will be requisite to have a guarantee fund towards paying the expenses of the directors' Act, and he (the Chairman) recommended the meeting to empower the directors to subscribe such a sum as they may deem necessary to such a guarantee fund, would only further remark that he was sorry to see so few shareholders present, and although that fact might, perhaps, only show that they were perfectly satisfied with the way the business of the company was carried on, still the directors, who devoted so much attention and care to the business, would be glad to see more shareholders appreciating their services by attending the annual meeting.

The reports and accounts were then adopted, and the following resolution passed:—1. That a dividend of 2s. 6d. per share on the paid-up shares, and 2s. 6d. on the new shares, being at the rate of 5 per cent. be now declared, payable on Nov. 13, which, with the two interim dividends of 5 per cent. each, paid Jan. 1 and June 1 last, makes 15 per cent. on the year.—2. That Messrs. John Lloyd and John Williams Lloyd, and Thomas Jones be elected directors of the company.

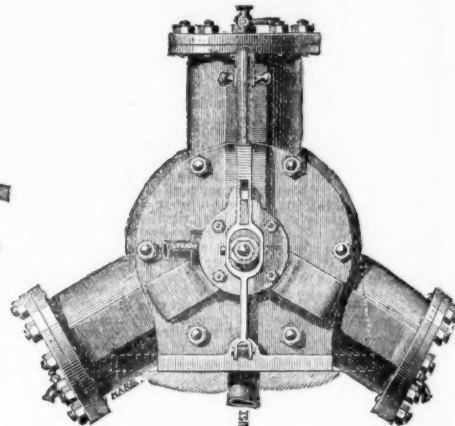
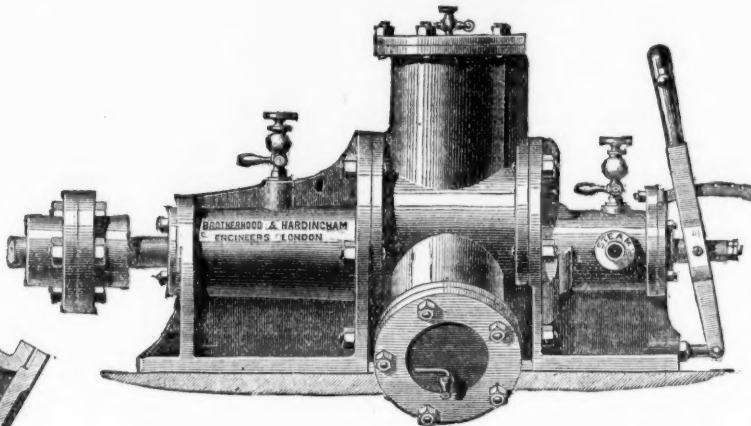
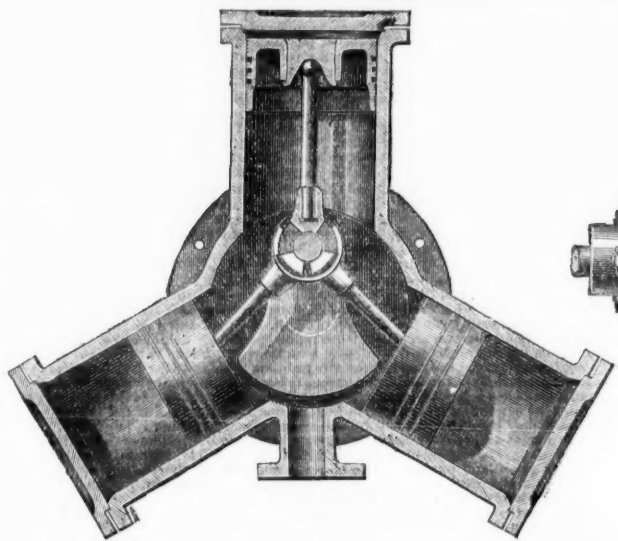
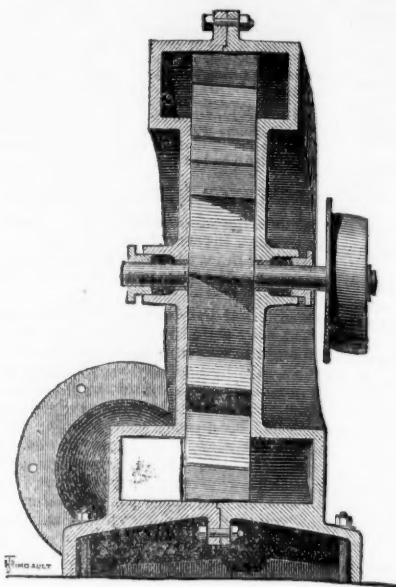
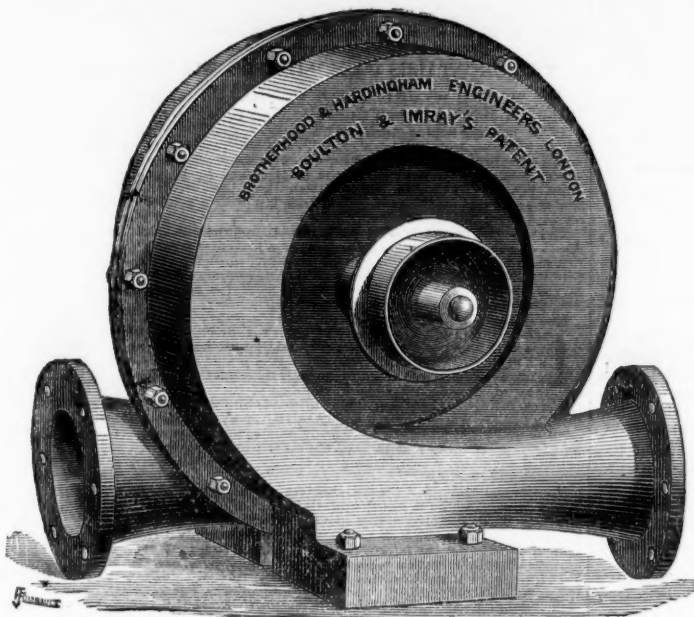
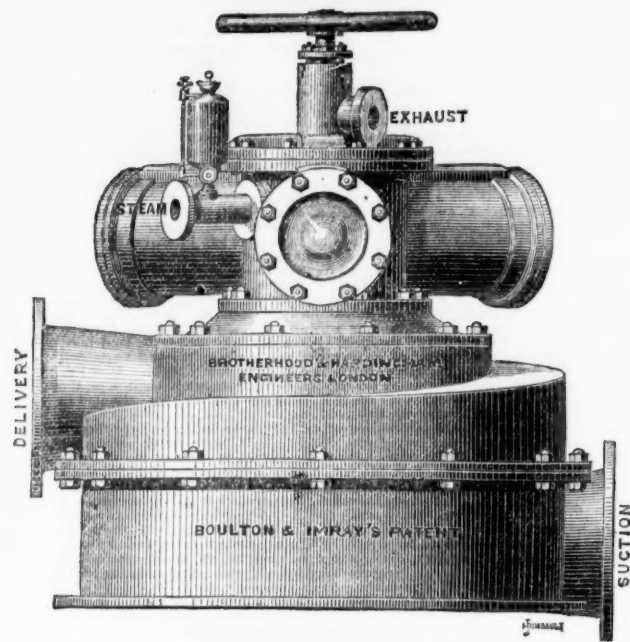
3. That Mr. John Godecote be re-elected auditor of the company.—4. That the directors be empowered to subscribe such a sum as they may think necessary to a guarantee fund for the purpose of obtaining an Act of Parliament to carry out the deep level scheme.—5. That the cordial thanks of the meeting be presented to the directors for their attention to the business of the company during the past year.

6. That the thanks of the meeting be presented to Mr. J. Jones (the secretary) and Mr. J. Lean (the local manager) for the efficient and satisfactory manner in

The late dynamite experiments at the Glaisdale Quarry have attracted much public attention. That dynamite is infinitely superior to gunpowder for blasting purposes is incontestable, and the result at Glaisdale must have been very encouraging to the shareholders. Dynamite is now most extensively used throughout the kingdom for blasting granite and other hard rocks, limestone, coal, chalk, shale, and sandstone, and for driving veins. Upon the continent of Europe, where it is, whilst there it is allowed to be carried by railway, here but few companies will take it; such is the dread of its destructive power. With ordinary care, however, it may be handled safely enough.

JAMES H. CROFTS.

IMRAY'S HELICAL PUMP, AND BROTHERHOOD'S THREE CYLINDER ENGINE.



IMRAY'S HELICAL PUMP, AND BROTHERHOOD'S THREE CYLINDER ENGINE.

An interesting paper on the Helical Pump by Mr. JOHN IMRAY was read at the meeting of the Institution of Mechanical Engineers on Thursday; and as both the pump and the engine with which it is worked are likely to be useful to a large number of readers of the *Mining Journal*, the opportunity is taken of publishing diagrams of the machines, from which their advantages can be readily judged of. Previous to the meeting many of the members of the Institution of Mechanical Engineers accepted the invitation to visit the works of Messrs. Brotherhood and Hardingham, in Compton-street, Goswell-street, and saw the pump in operation, driven by one of the three-cylinder engines mentioned. From the transverse section of the engine, shown in the diagram, the simplicity of the arrangement and the facility for adoption for various purposes which it possesses will be so readily appreciated that the claim that its extraordinary and undisputed advantages are causing it to be rapidly adopted, not only as a steam-engine, but also as a water-engine, force-pump, blowing-engine, air-compressor, and exhauster does not appear to be an exaggerated one. The engine will start with the crank in any position necessary, there being no dead centre, and a perfectly uniform motion of the shaft is obtained without the use of a fly-wheel; the connecting rods being always in compression, there is no blow on the crank pin at either end of the stroke, no matter how loose the fit may be, or at what speed the engine may be running; glands are rendered unnecessary, and the working parts are entirely enclosed and protected from injury; the lubrication is carried by the steam to every part, the rotary slide valve may be arranged to cut off at any required degree of expansion, and a governor, or reversing gear, may be readily applied. The engine can be worked at a very high speed, so that immense power is developed in propor-

tion to its size, and it has the great advantage that it can be coupled directly to fans, rotary pumps, or almost any other machinery.

For the driving of ventilating fans, such as Gaibal's, now largely used in connection with colliery operations such an engine would in many cases be at once economic and convenient; it would lie horizontally on the fan, being directly connected with the fan axle, and would not occupy any space beside that already required for the fan itself. The manufacturers state that the details of construction, both as regards the relative proportions and the selection and arrangement of materials, are the result of careful study of the requirements of the engine when working under a variety of conditions, and many improvements suggested by numerous experiments have been introduced. The pistons, it will be observed, are very deep, and guide themselves in the cylinders. The connecting rods are forged in steel, and their crank-pin ends are cast on in hard phosphor bronze; their piston ends are hardened, and work in hard phosphor bronze, rivetted into the centres of the pistons. The crank-shaft is steel, the pin being hardened to a proper temper. The rotary slide valve is tubular, and of small diameter, so that every part of its wearing surface moves at a uniform and moderate speed. Every engine is thoroughly tested with steam before leaving the works. The engine running on Thursday was of about 12 indicated horse-power, the cylinders being 5 in. diameter and 4 in. stroke, the piston speed about 300 ft. per minute, and the average pressure 40 lbs. to the square inch. When a steam-engine can be applied to drive a shaft direct the design shown in the lower diagram is adopted, and, owing to the lightness, compactness, and high speed of the machine, it may in many instances be fixed on a wall or other support, and coupled to the main shaft in a factory, thus dispensing with the driving riggers and belt. This engine has been largely adopted for driving screw-propellers, and for this application the cylinders and frame are sometimes made of phosphor bronze in order to secure extreme lightness; this entails, however, an increase of about 15 per cent. in the cost. The reversing gear is of a simple and re-

liable character, and may be operated whilst the engine runs at full speed. A spring catch takes into notches in the quadrant, so that the lap of the valve may be altered at will, as with ordinary engines.

With regard the Helical pump, it is shown in elevation and section, and also attached to the three-cylinder engine in the upper diagrams, and certainly appears to be one of the most simple and efficient pumps yet constructed; indeed, the manufacturers claim that its simplicity reduces the cost of construction so much that it can be supplied at prices very considerably below those charged for centrifugal or other rotary pumps. As there are no fitting parts, except the bearings for the shaft, and as the velocity of rotation for a given lift is very much lower than usual, the liability to derangement and wear is reduced to a minimum. In respect of efficiency, the Helical pumps give results superior to those obtained from the best rotary pumps hitherto employed. The peculiar feature of the Helical pump is that the section of the water passage is uniform throughout the instrument, and that there are no bends, turns, or alterations in the form or direction of the fluid current. This peculiarity not only contributes in great measure to its high efficiency, but also renders any choking of its passage impossible. The combined engine and pump, which is similar in design to that shown on Thursday, except that it was vertical instead of horizontal, is specially adapted for irrigation, drainage, emptying graving docks, general manufacturing purposes, and circulating water through surface condensers, all shafting and driving belts being dispensed with. Its chief advantage over the ordinary centrifugal pump are—the increased efficiency, the great reduction in speed necessary for a given height, the comparatively small space occupied, and the diminution in weight. For surface condenser circulation this arrangement has been pronounced by the best authorities to be the best yet introduced, and on Thursday, although there was no facility for showing the full power of the pump, the opinions expressed of the merits of it and the engine were, without exception, highly favourable.

BESSEMER STEEL.—The manufacture of Bessemer steel has been carried to great perfection in America in recent years, and the quantity turned out had grown from 8500 tons in 1868 to 140,000 in 1873. Other kinds are also made, but most attention is paid to Bessemer, in the making of which a great number of improvements have been introduced, whereby quality is improved and the work done more quickly. The capacity of the works adapted for making this kind of metal will reach 222,000 tons for rails alone during the present year we are told, but of course the actual output will depend upon demand, and has, at any rate, been much less than this. There appears to be some difficulty in finding ores suited for Bessemer steel in the States, and as yet no sufficient quantity has been developed east of the Alleghenies to insure a large and steady supply. Algerian and Bilbao ores have been imported as an experiment, but are too dear, costing as they do close on 4/- a ton at the furnace. The cost of the Bessemer pig itself was about double what it was early last year, but has since declined to 6/-. The manufacture of other descriptions of steel is pursued in the States to a much less extent, and has only grown from 15,262 tons in 1865 to about 28,000 in 1873.

CAST NICKEL PLATES.—For some years back much attention has been drawn to the galvanizing of plates of metals, especially iron, with nickel, and larger plates of metallic nickel have been much wanted for the anodes of the galvanizing nickel salt baths. The extraordinary refractory nature of pure metallic nickel has been, till lately, a great hindrance to the casting of large plates. Borchert, however, has lately succeeded in casting nickel plates 18 in. long, 14 in. broad, and 1/4 in. thick. The nickel hitherto used, Saxon Wurfel nickel of 98 to 99 per cent. strength, is fused in crucibles in a simple brazier's furnace, by a coke fire. The fusion requires continual and laborious attention, the metal not becoming fluid till after at least six hours' firing. As soon as it becomes fluid it must be cast without delay into the sand moulds, for as soon as the fire drops a little the nickel is liable to solidify again into a solid mass, in which case a renewed fusion in the same furnace is impossible. —C. A. BORCHERT.

PEAT.—Mr. J. IMRAY (for Mr. W. B. Hays, of Cape of Good Hope) has patented some improvements in the preparation of peat for fuel or charcoal, and apparatus therefor. The invention relates to a method of and apparatus for preparing peat in blocks for fuel or charcoal, by straining and moulding it in a number of moulds arranged round the periphery of a revolving wheel or ring; each mould being fitted with a piston and provided with a cover, both of which are porous and clothed internally with hair cloth. The pistons and covers have rollers which bear on guide rails, by which they are moved as the wheel or ring revolves; the pistons being made to ascend and descend in the moulds, and the covers to fold back and to close over the moulds. At one part of their course, the covers being folded back and the pistons descending, the moulds pass under a hopper charged with pugged peat, with which they are filled. The covers are then closed down, and the pistons are made to ascend and compress the peat, straining out a large portion of the moisture and moulding it into blocks, which, when the mould covers are opened, are extruded by the farther ascent of the pistons, and are guided off the apparatus by a curved guide. The strain of compression, while the pistons are

ascending, is taken off the wheel or ring by rollers running along the under surface of a suitable guide rail. The blocks discharged from the apparatus are afterwards dried and seasoned.

PREVENTING INCrustation.—Mr. A. SMITH, of Pera Lodge, Loughborough-road, Surrey, has patented some improvements in the means for purifying water, also applicable for preventing incrustation in steam-boilers, and for detergent purposes. This invention consists in the use, for purifying water, of the hydrated silicates of magnesia, alumina, iron, lime, baryta, or manganese. A small quantity of one of the silicates is mixed with the water, and allowed to subside, whereby the lime contained in the water will be precipitated. For washing or scouring textile fabrics one of the colourless silicates is mixed with hot water and soap, and the goods are washed in the usual way. For preventing incrustation in steam-boilers, one of the silicates is mixed with the water in the boiler, whereby the impurities of the water will be precipitated in a pulverulent form, and the precipitate is blown off from time to time.

GAS.—Messrs. D. HULETT and S. CHANDLER, gas engineers, have patented an invention which has for its object improvements in apparatus used in the manufacture of gas, and relates more particularly to the use of an improved washer, scrubber, and exhauster for the purpose of washing, condensing, and purifying the gas, air, or vapour. The invention of Mr. J. S. MITCH, of Leeds, consists in charging atmospheric air with hydrocarbon from petroleum. —Another patent has for its object the manner of refining petroleum by means of bichloride of tin. —The invention of the Rev. H. MOULE, of Fordington Vicarage, relates to a novel method of producing and manufacturing gas from shale coal, boghead peat, and other gas-yielding substances in combination with chalk or limestone.

GALLENITE.—Mr. J. DAVID, of Paris, has patented a new compound of lead, applicable to the purposes for which white lead and red lead are employed, and the process of producing such compound from galena. The invention consists in producing a new substance termed galenite from sulphuret of lead. Galena is reduced to powder and is oxidized at a low red-heat in open retorts, and is thus converted into a bisulphate, which is then ground between millstones immersed in water. The liquid thus obtained is placed in vats; and the suspended matter is allowed to deposit, and is dried, and constitutes the new substance termed galenite, which is applicable for all purposes for which red-lead and white-lead are employed.

IRON AND STEEL.—Mr. J. V. SAINT DAY, of Buchanan-street, Glasgow, has patented (for Mr. James Henderson, of New York) some improvements in the manufacture of iron and steel, and in furnaces employed therefor. The features of novelty which constitute this invention are,—1. The improved reverberatory furnaces.—2. The combination with gas furnaces of apparatus for forcing into the generator and the furnace measured quantities of air—3. The process or treatment for eliminating sulphur and phosphorus from molten iron, refined or partly refined previously in the Bessemer converter; also for converting old or scrap wrought-iron into steel, and of manufacturing cast steel or homo-

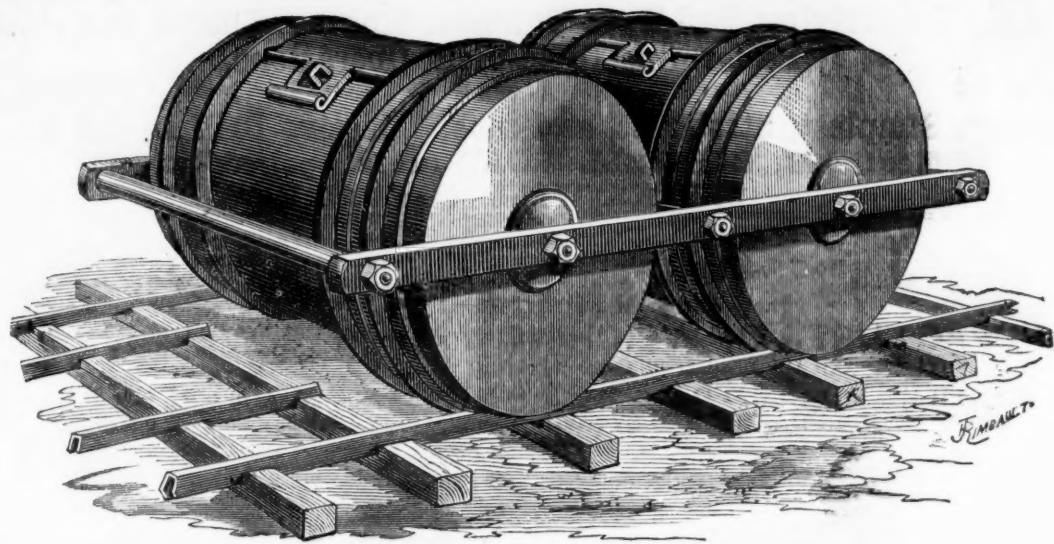
geneous malleable iron from pig-iron in a reverberatory furnace, in which the first part of the manufacture is conducted at a lower temperature than the latter.—4. Manufacturing cast-steel and homogeneous malleable iron in two furnaces of different temperatures, each provided with movable hearths.—5 The method of imparting a steady property to iron.

ASBESTOS.—Mr. J. CLEGHORN, of Glasgow, and T. G. PATERSON of Edinburgh, have patented some improvements in the treatment and preparation of asbestos, and in making various fabrics and articles therefrom. This invention consists in making paper out of asbestos fibre pulp, or a mixture of that with other suitable fibre or material, and cutting this asbestos paper into strips, and, by a first improvement, twisting these into thread, yarn, or cord, either with or without being first coated with indiarubber; and in twisting two or more of these into larger cords or ropes, either with or without a core of vulcanized or pure indiarubber, or of other equivalent or suitable elastic or flexible material, all for making the fluid-tight packings and joints of the stuffing boxes, working and other parts of steam engines and other machinery, pipes, boilers, stills, and retorts. And, second, in plating these twisted asbestos threads into braids, or round or polygonal cords or bands, also for making the said packings and joints of machinery and apparatus. And, third, in weaving the said asbestos thread or yarn into a cloth, somewhat about the texture of canvas, which would withstand the action of the weather and heat, and so be used for the flange joints of pipes and other apparatus, and for coverings, mail and despatch bags, window curtains, also for producing works of art upon desired to stand against decay and fire and for making wrappers for projectiles. And fourth, in cutting or forming or making waddings, cartridge cases, and wrappers for the cartridges and projectiles of either rifled or smooth-bore fire arms or cannon, out of the said asbestos paper, millboard, pasteboard, or woven fabric, which would prevent all windage with the least possible amount of friction, from the flexibility and lubricity of the asbestos enabling the barrels to be kept longer clean and be fired oftener than is possible with the appliances at present in use.

ROCK-BORING.—Messrs. R. BRYDON and J. S. DAVIDSON, of Whitehaven, have patented some improvements in rock-boring drill carriages. The invention consists of a bogie or carriage running on wheels, and intended for boring their rock boring drill, as described and illustrated in the letters patent granted to them, bearing date June 3, 1873, No. 1991 the said carriage being surmounted by a movable jig hinged to a turntable or other device, by means of which the said jig can be turned round to any side of the carriage; and further, by means of a screw or other contrivance, elevated or depressed radially to its hinge without shifting the position of the carriage for the purpose of adjusting or working the said rock drill to the varying positions of the rocks to be bored, the same being attached to the outer or upper end of the said movable jig.

ARTIFICIAL FUEL.—Mr. J. A. B. WILLIAMS, of Cardiff, C.E., has patented an invention which has for its object improvements in the manufacture of artificial fuel, whereby coal, coke, peat, or similar substances, when in a state of powder or fine division or dust or duff, is heated so as to produce solid waterproof fuel of great commercial utility, particularly for steam purposes.

ROLLING RAILWAY CARS, AND MIXED GAUGE RAILWAYS.



ROLLING RAILWAY CARS, AND MIXED GAUGE RAILWAYS.

Reference has already been made in the *Mining Journal* to an improved system of transport without breaking bulk on mixed gauge railways, patented by Messrs. WALKER and RAGON, and from the above diagram the nature of the invention will be more readily understood. Mr. Walker proposes to run his rolling cars in pairs, and consequently mounts two of them in a light framing, which is supported and carried by the axles of the cars. The cylindrical car and its load being practically one rolling body upon the rails, a comparatively small engine will be sufficient to convey trains composed of them to the coast. The cars can also be fitted with self-acting brakes, to prevent them running back down inclines. They may be made of any reasonable size, according to the character of the produce to be carried; and when made water-tight may be beneficially employed for the conveyance of water in seasons of drought. The engraving shows the general arrangement of the rails at the point of junction of two railways of different gauges, the sleepers are grooved true to gauge by suitable machinery, and afterwards creosoted when desired. The rails, which are fitted therein, are formed of timber cased with rolled iron, and are further secured to the sleepers by pins or bolts. The object of the invention, as already stated—and it cannot be doubted that that object is attained very ingeniously—is to permit the transport of minerals, grain, cotton, and, indeed, of merchandise generally, over railways of two distinct gauges—say, a 3-ft. gauge and a 4-ft. gauge—without breaking bulk, and, if necessary, without even stopping the train at the junction where the gauge changes. As is frequently the case, the invention is as simple as it is ingenious and useful, and were it not that the patents protecting the invention are not yet completed, a full description of the entire arrangement would be published to-day; as it is, the details will be given at the earliest possible moment.

The importance of such an invention in America, Australia, or any other country where facility of transport would afford the means of sending to the old and thickly-populated countries of Europe, and at considerable profit to the producer, the enormous surplus of food-

stuff which they are capable of producing can scarcely be over-estimated; so that Mr. Walker may fairly be congratulated upon his excellent prospect of securing a very large reward for his ingenuity. It has been observed that the great famine in India, now daily brought under notice, is caused, perhaps, more through want of road and railroads than through anything else, as were these in existence not only could food be more readily conveyed to those who are suffering, but means would be afforded to open up the interior of a country abounding in all that would be useful to the inhabitants themselves, and valuable for export to this country.

For the transport of minerals over long tramways to the nearest railway such an invention as this would be invaluable, and the system of rails which Mr. Walker proposes to use in connection with his rolling cars could be very economically laid down. In the first place he constructs a railway with 15 lbs. of iron to the yard as strong and durable in every respect as the roads now made with 60 lbs. to the yard, and he provides the means of running over the narrow and broad gauges indiscriminately, and that, too, without making any change whatever in either engine or carriage, thus giving new facilities to all new countries, for they can be opened up and brought into communication at a very small cost with all the main lines. The new railway has the further advantage that, as well as being cheap and durable, it will require very little repairs, and, coupled with the new mode of conveyance, will not require one-third the power to work the line. The advantage of this will be obvious, as an engine of 20 tons weight will do the work, and that, too, both on the broad and on the narrow gauge, as well as a 40 or 50 ton engine with the present system. The entire cost of construction will be proportionally reduced, and the working cost will be reduced to one-third. The economy which would result from the transport of ore by this means would, of course, be further increased by the avoidance of waste, which frequently varies from 1½ to 3 per cent., and represents a loss when the ore carried is of high produce, which would speedily repay the entire cost of laying the line and getting it into operation.

FOREIGN MINING AND METALLURGY.

Copper has continued to advance at Paris; Chilian, in bars, has made 89%; ditto, ordinary descriptions, 86½%; ditto, in ingots, 93%; English tough cake, 91%; and pure Corocoro minerals, 86½ per ton. Chilian copper has been firm at Havre, but upon the Marseilles market the article has been a little quieter. Tin has been rather easier in Holland. The demand on consumptive account is almost insignificant, and as holders maintain their rates there is scarcely anything doing. Disposable Banca can be obtained at 57½ fl.; ditto, with delivery at the November sale, 57½ fl. Billiton has been quiet at 54½ fl. to 55 fl. At Paris the tin market has been well maintained; Banca, delivered at Havre or Paris, has made 104½ 16s.; Straits, 99%; and English, delivered at Havre or Rouen, 98½ per ton. Upon the German markets tin has been rather drooping. There has been a slight reaction in the price of lead at Paris; there has, nevertheless, been a fair demand. Lead has been tending upwards at Marseilles, in consequence of the absence of stock. The German lead markets have continued firm. The Paris zinc market has remained without variation. The German zinc markets have exhibited a slightly better tendency.

The Belgian iron trade continues quiet, and there is not at present any prospect of any increase of activity. Some small orders are received from day to day, but important transactions almost entirely make default. The steelworks have their production engaged for some time to come, but at rates which are not very remunerative. It is to be hoped that the low rates prevailing will not exert an unfavourable influence upon the quality of Belgian steel; but it must not be forgotten that analogous conditions brought about a depreciation in Belgian iron upon foreign markets from which Belgian industrialists have not yet fully recovered. Belgium had some years since almost an exclusive monopoly of the Dutch markets as regards the supply of rails, but Holland seems now likely to fall Belgium as a market for her metallurgical products. Thus, at a recent adjudication at Amsterdam, although the Acoz Forges Company submitted the lowest tender out of nine competitors, it was the Bochum Company which carried off the two lots of rails open for competition, the Dutch Railway Company having decided preferentially upon the adoption of steel rails. The price offered by the Acoz Forges Company, including accessories, was 9½, 5s. 9d. per ton for iron rails, while the price of the Bochum Company for steel rails was 12½, 8s. 4d. per ton. Upon this occasion the Bochum Company vanquished 14 competitors, the rest including English, German, Belgian, and French works. Saxony has also invited tenders for 6000 tons of steel rails, and there seems no doubt that in a few years all the leading railways of Europe will become roads of steel, to the great advantage of the companies working them, and to the increased security of the travelling public. The Great Central Belgian Railway Company has let a contract for 3000 tons of Bessemer steel rails to the Angleur Works at the rate of 11½ per ton, to be delivered next year. With the help of this new contract, the order books of the Angleur Company may now be regarded as well filled to the end of 1875. The John Cockerill Company has been officially authorized to bring into activity in its ironworks 53 puddling-furnaces, 25 heating-furnaces, &c.; and in its steel division 2 blast-furnaces, 8 Bessemer converters, &c. Four of these converters are already working in the most satisfactory manner, and the blast-furnaces for the production of cast-steel will be shortly lighted. The John Cockerill proprietors have voted the funds for the establishment of new appliances for working steel. The report of the Mons Chamber of Commerce for 1873 estimates that the production of pig in that district last year was reduced to the extent of 33 per cent., while that of iron fell off 25 per cent. Affairs have been in a languishing state also during part of this year. The number of blast-furnaces in the Mons district is returned at three, and they produced altogether 27,400 tons of pig; the foundries cast 10,434 tons; and the four rolling-mills which were maintained in activity turned out 25,815 tons of iron. Three establishments for working iron also

produced 2155 tons. The number of workpeople employed was 1652, and the value of the production effected was 571,536.

The French iron trade has been, upon the whole, rather quieter. The state of affairs is still, however, far from bad, only a few complaints being heard from certain works of the Loire basin. The French steel manufacturers are beginning at the same time to have some apprehensions not of a want of work but of having to work for nothing. There is a general enquiry how Belgian works can possibly find it profitable to produce steel rails at 10½, 8s. to 11½ per ton. The question is one of serious import, as steel-making industry has acquired of late years a very great extension in France, and promised to yield very encouraging results. Under present circumstances it is not surprising to find that increased attention is being devoted to improved processes for the manufacture of iron. Questions which appeared to have gone to sleep—such as rotatory puddling, the granulation of pig, &c.—are once more to the front. There are also complaints that steel is not classified upon any intelligible system by the various producing works.

The weather has become colder in France, and orders for domestic qualities of coal have accordingly presented themselves more freely upon the French markets. There has, nevertheless, been no material increase of activity in affairs, and no advance in prices is reported. The few fluctuations which are remarked in selling prices in the Pas-de-Calais seem to depend almost exclusively on the greater or less importance of the arrivals of Belgian coal. In the basin of the Loire the state of affairs is less favourable than in the Pas-de-Calais; in the Loire there has been a downward tendency in prices, sales have shown little activity, and stocks have exhibited a tendency to increase. M. Duclercq, Engineer in Chief of Mines, has just published an interesting report on the coal mining industry of the department of the Nord during 1873. The production of the department in 1873 is estimated by M. Duclercq at 3,503,461 tons, a total presenting an increase of 257,458 tons, as compared with 1872. In 1861 the total production of the department was only 509,575 tons. The companies working coal in the department are seven in number. The Anzin Company takes the lead with a production of 2,191,504 tons; next in order, according to their relative importance, come Aniches, Douchy, Escarpelle, Vicoigne, Thivencelles, Fresnes, and Azincourt. These companies have 13 working centres and 46 pits in working. The coal mining population of the Nord in 1873 was 19,267, of whom 14,038 were working below and 4329 above ground. The total of 12,267 presents an augmentation of 1546, as compared with the corresponding figures for 1872. The amount paid away in wages by the coal mining companies of the Nord in 1873 was 840,538. Wages appear to have slightly advanced last year, as compared with 1872. On the other hand, the average price of coal in the Nord was 2s. 6d. per ton higher in 1873 than in 1872. The consumption of coal in the department of the Nord in 1873 is estimated by M. Duclercq at 2s. 6d. per ton; of this total 135,000 tons came from England. A report on coal working in the Pas-de-Calais in 1873 has also been just presented to the Council-General of that department. The 18 concessions now in force in the department produced, in 1873, 2,985,699 tons of coal, showing an increase of 276,000 tons upon the production of 1872. Ten new centres of working are in course of development, and it is expected that the coal production of the Pas-de-Calais will shortly equal that of the Nord. The number of workpeople employed in coal mining in the Pas-de-Calais last year was 17,426, or 2000 more than in 1872. The amount paid in wages in 1873 was 650,572. The coal consumption of the department amounted last year to 1,393,984 tons.

The state of affairs in the Belgian coal trade begins to be more clearly defined; there appears to be no possibility of an advance in prices until the great industries of the country regain activity. The Belgian glass trade is in a good condition, and makes purchases to some little extent. The indigenous sugar manufacture is also in full activity, but these two branches of industry are not likely to give out any important orders for the present, as they some time since concluded their contracts for the winter season. The laying

in supplies for the purposes of domestic consumption alone gives rise, then, to such activity as is remarked in deliveries. In the Couchant de Mons orders continue to follow each other in a satisfactory fashion; in the Charleroi basin the production appears to be disposed of without any important stocks being formed; and at Liège business is pretty well supported in domestic qualities of coal, although coal for industrial purposes is relatively neglected. The competition of English and German coal renders it quite impossible for Belgian coalowners to attempt an enhancement in quotations. With the prudence which Belgian coalowners appear now disposed to exhibit, the invasion of foreign coal seems likely to soon cease to be attended with any disturbing or disquieting consequences. A satisfactory solution of transport difficulties would even probably enable Belgian industrialists to regain the position upon the Luxembourg market of which the Germans have endeavoured to deprive them. With the present conditions upon which coal is produced in Belgium it is impossible that foreign coal can long be sold at a profit in that country. There is no change to note at present in Belgian coal quotations. The report of the Mons Chamber of Commerce for 1873 states that while the total production of coal in Belgium increased last year 119,455 tons, the extraction of the Mons basin was 155,933 tons less last year than in 1872. This adverse result as regards the Couchant de Mons is attributed to the reduction which was observed last year in the average amount of work executed by each working miner of the basin. The report calls attention to the fact that while Belgium imported 94,000 tons from England in 1872, it received from the same quarter 225,000 tons in 1873. The imports of German coal, again, which stood at only 20,000 tons in 1872, increased last year to 334,288 tons.

SOUTH AUSTRALIA.

THE KURILLA.—Work is being vigorously prosecuted on account of recent valuable discoveries. The shaft is down about 7 fms. Capt. Anthony concludes from this that the newly-discovered lode is entirely distinct from that which the company formerly worked to advantage. The value of the ore is similar to that of the Devon Consols. Yesterday (Sept. 5) Capt. Anthony informed us that a lode had been unexpectedly cut in digging for a tank. He without delay put on a pair of men to sink a costening pit at a spot about 35 fms. north of the recent discovery. The men had not got down more than 6 ft. before they came upon a beautiful lode, consisting of soft green carbonates. This valuable discovery is situated 18 fms. from the western boundary line of section 395, which is the south-west part of the Devon Consols. These important discoveries are naturally causing excitement, and the best hopes are being entertained for the success of operations on a larger scale. —*Wallerawang Times*, Sept. 9. —[The lode discovered on Sept. 8 is a discovery made after that lately telegraphed as having been found; both these new lodes appear to run parallel to the lode previously worked on. —*Ido*, M. J.]

THE DEVON CONSOLS.—A correspondent, under date of Sept. 7, writes: "In visiting the mine to-day we found the new lode opened near the Kurilla Mine still improving in its prospects. There have been about 10 or 12 tons of 25 per cent. ore raised during the past week, and removed to the floors on the old part of the mine, to be dressed for the market. Some of the rocks would weigh from 2 to 3 cwt. There have been two pits sunk upon the course of the lode about 5 fms. apart, each showing a splendid lode of ore, the eastern pit being the scene of operations, in which the lode of copper is seen to be 5 ft. wide, and the north side has not been seen as yet. Those pits are about 17 ft. from surface; the class of ore is soft, green, grey, and liver coloured. It is really the finest-looking lode that has been found on the Peninsula for many years past, and without a doubt will become a source of wealth not only to the shareholders but the neighbourhood at large. The other parts of the mine are still turning out some yellow and bell-metal ore, and judging by the amount of ore on the floors the necessity for calls will soon be a thing of the past."

THE WALLAROO.—At Higgs's shaft the lode has improved, presenting below the 40-fm. level 4 ft. of very rich yellow ore.

THE MOONTA.—The rise which has been in process of execution at Treuer's workings for some time past has been completed, and communication having thus been effected with the surface at a point at some distance from the shaft, the levels are thoroughly ventilated, so that the miners are enabled to carry on their operations in a comparatively pure atmosphere. At Musgrave's the ground is becoming more easy to penetrate as the drive is extended, and the men are consequently making satisfactory progress in the work. In the 20-fm. level, south of Hall's shaft, situated near the township, a great improvement has taken place in the lode, which is now yielding about 3 tons per fathom. In high-class solid grey ore. We notice that men are now costening for this lode further south. There is little doubt that it will be intersected, and another valuable run of ore laid open. At the 35-fm. level, north of North Young's shaft, a good discovery has been made by the cutting of a leader of solid yellow ore about 1 foot in width, and estimated to produce 25 per cent. of copper. The ground that has been worked in this part of the mine has been of a barren character for some time past, but the indications of the proximity of copper were sufficiently encouraging to induce the agents to continue extending the level, and the result has proved highly satisfactory. A great improvement has taken place in the lode at the bottom of Bennett's shaft. Costening operations are in progress in various parts of the property. Affairs generally are going on satisfactorily. Some places are being exhausted of ore, but on the other hand good discoveries in various workings are constantly taking place.

THE DOORA.—The position of this mine is improving. The quality of the ore in the lower levels is better than has been the case for some time, whilst the quantity produced is on the increase. The next sampling, it is said, will be of a more satisfactory character than any that has taken place during the past twelve months. As a proof at once of the productiveness of the mine and the economy of its arrangements, it is stated that for every man employed there are raised from 5 to 6 tons of ore per month.

THE HAMLEY.—Capt. Warren reported on Aug. 24: "The lode left in the foot-wall side of the 30 and south is yielding some good ore, but it seems rather patchy. The ground is good, and fair progress is being made in driving. The tribute pitches throughout the mine are looking very well, and ranging in productiveness from 2 tons to 10 tons of ore per fathom. We have sold 107 tons of ore during the fortnight, and hope to sample 200 tons more during the next."

THE BAROSSA GOLD MINES.—The tributaries at the Lady Alice Mine expect to get about 150 ozs. of gold from their next fortnightly crushing of quartz. The property is improving much.

MOONTA MINE MANAGEMENT.—In its impression of Sept. 9 the Wallaroo paper reported:—"On the occasion of the survey on Saturday last at Moonta, it was publicly announced that in future the directors intended to give the men a half-holiday on Saturdays, with the understanding that the Midsummer Day and the Christmas Eve holidays had to be relinquished. This gave universal satisfaction. It was announced throughout the mine by the usual posted notification from the manager, but after the survey he appeared in the sitting box, and informed those assembled that the directors had resolved on dispensing with the services of Messrs. Strike, Tonkin, and Sleep. These persons, it need not be said, had rendered themselves conspicuous during the most recent of trade disturbances."

THE HARBOUR AT WALLAROO.—The local press states:—"Men are engaged in forming a breakwater of slag against the south side of the jetty in Wallaroo Bay, at the point where it leaves the shore. The object is to carry the bank out as far as low-water mark, in order to prevent the violent incursions of water driven by westerly gales, which have on more than one occasion lately threatened the stability of the vertical planking of the wharf to the north end of the jetty. If the company would undertake the greater work of making a breakwater, so as to protect the shipping in the harbour, they might comparatively inexpensively perform a national as well as local work of the highest value."

A resolution has been carried in the Legislative Council calling upon the Ministry this session to bring in a bill for the construction of a railway to the Murray. The Government are pressing on the surveys of several alternative lines, and have promised that they shall be completed in two or three weeks, when they will introduce a bill to carry an iron road over whichever is found to be the best line.

The railway receipts on the Port Adelaide and Northern lines during the 35 weeks ended Aug. 29 amounted to 88,930, 17s.; and on the Port Wakefield and Hoyle's Plains Railway, and the Strathalbyn, Goolwa, and Victor Harbour Railway, from the beginning of the year to July 25, to 49,677, 10s. 8d.

We are having a splendid season, an abundance of rain having fallen. The wheat crops are looking well.

Shearing is in full progress in the North, and a good clip is being obtained. —*South Australian Register*, Sept. 9.

MINING IN AUSTRALIA.—Mr. F. Wright, of Gresham Chambers, Adelaide (Sept. 8) writes:—"Mining stocks show signs of improvement in consequence of a rise in the copper market and new discoveries on Yorke's Peninsula. Moontas are advancing steadily, and are in moderate demand at 16½ to 18½ 10s. The labour question is more settled, and matters altogether wear a more promising appearance. Any further advance in the price of copper will have a very healthy effect on the market."

AUSTRALIAN GOLD.—It appears that the gold of the territory in the northern portion of Australia is not nearly so pure as that which is found in other parts of that continent. The *South Australian Advertiser* has the following remarks respecting the quantity of gold obtained from different claims in the northern territory, which was sent to the Victorian Mint:—

"The English and Scottish Bank has received from the Victorian Mint an account of the results of the melting down for coinage of the parcels of the precious metal recently sent to that institution by the Bank. The total amount weighed into the Mint was 2795.06 ozs., and the weight after melting was 2711.40 ozs. It is somewhat startling to find that out of this latter quantity as much as 268.20 ozs., or nearly 1-10th, was fine silver. The stuff from the Union claim showed the largest proportion of silver. The amount weighed in was 771.45 ozs.; after melting there remained 755.73 ozs., from which 108.69 ozs. of the silver were taken. The smallest percentage of silver was in the Alexander parcel, only 6 ozs. coming from 240, the quantity remaining after melting from 245.10. It is worth noting that the alluvial gold obtained about the Union contained even a greater proportion of silver than did the metal taken from the reef. One parcel of 32.15 ozs. gave 5.96 ozs. silver, and another of 12.71 ozs. yielded 2.26 ozs. of the less valuable metal. Westcott's had a proportion of about 1 in 16, Sandy Creek about the same, and the Telegraph rather more than 1 in 10. The fineness of the gold ranges from Winn's 17.2 carats, to Alexander 22.3. The former wasted in melting from 90.74 ozs. to 84.04 ozs., but then the proportion of silver was only about 1 in 20. The percentage of silver and the quality of the gold itself differ not only in different gold fields, but in different workings very short distances from each other. The admixture

of such large proportions of silver is a new feature in Australian auriferous mining, and renders care in dealing necessary to both buyers and sellers."

AUSTRALIAN MINES.

PORT PHILLIP AND COLONIAL GOLD.—The directors have received the following advice, dated Sept. 5:—Quantity of quartz crushed for the four weeks ending Aug. 12, 5000 tons; pyrites treated, 22 tons; total gold obtained, 970 ozs. 9 dwts., or an average per ton of 3 dwts. 20 grs. Receipts, 3767l. 1s. 6d.; payments, 3193l. 8s. 9d.; profit, 573l. 12s. 9d., which, added to the last month's balance of 262l. 17s. 4d., made an available balance of 836l. 10s. 1d., which was carried forward to next month's account.

ENGLISH AND AUSTRALIAN.—Sept. 10: The quantity of coal on hand and afloat was 1500 tons. All the furnaces, both at Adelaide and Newcastle, were in full work. Since the date of last advice about 87½ tons of copper had been shipped.

ANGLO-AUSTRALIAN.—Capt. Raisbeck, Sept. 7: I have the honour to report progress since the 10th ult. Prospecting Shaft: We have extended north drive 55 ft.; distance from shaft, 283 ft.; and have broken and crushed 62 tons of stone; result, 13 ozs. 5 dwts. I have taken about 8½ ozs. of gold from the plates: total for the month, 21 ozs. 15 dwts. of retorted gold. We have crushed for the public during the month 124 tons of stone. The quartz in the drive much the same during the month. On the 15th ult. I deemed it prudent to discharge five of the workmen who were breaking quartz in the stops, the expense of retaining the stone being so much. When the cross-cut from our east shaft is connected with our present workings we shall save one-third of the cost. I am pushing forward our north drive as fast as possible, having reduced it to as convenient a size as is consistent with speed. This is the best work we can do at present; although we shall not get much quartz it is necessary, as well for the permanent ventilation of the mine and prospecting the ground. All machinery, &c., is in good order.

YORKE PENINSULA.—The directors have advice from the Committee of Inspection of the company at Adelaide, with reports from the Kurilla Mine to Sept. 10. These fully confirm the purpose of the telegrams of Aug. 20 and Sept. 1, and carry advice of progress of operations nine days later than the last-mentioned date. Two lodes (a second discovery having been made since the first was telegraphed), believed to be distinct from and parallel to that on which work has hitherto been carried on, and in which 120 ft. of ore in the bottom of the 25, west of Deeble's shaft, have, it will be remembered, been laid bare, have been discovered, and both producing ore of a high per centage for copper. The following are extracts from Capt. Anthony's reports:—Aug. 20: It affords me much pleasure to tell you that the discovery east of Hall's shaft is developing beyond our brightest hopes. * * * The bottom of the cross-cut contains a lode 2½ feet wide of 20 per cent. ore of the most promising character, at a depth of about 13 feet; it is now worth 6 tons of 20 per cent. ore to the fathom. * * * Sept. 7: At 20 feet deep a large boulder of grey ore was met with in the east end of the shaft, and projecting a little way into it. After getting through the limestone crust and the underlying clay (at the depth of 7 fathoms without meeting water) the lode has varied in width from 1 to 3 ft., and is composed of broken quartz, cemented with staurolite and rich yellow gossan, with stains of ore. Of the lode I may say that, apart from the ore discovered, a more promising one can hardly have been seen, and the surrounding stratum is soft mica slate of the most congenial kind for copper. I consider the discovery is of the greatest importance to the property, not only intrinsically but relatively, showing as it does the value of the lode so far away from any previously known ore deposits. Perhaps it will not be amiss to say that our success sets the Devon Consols Company going concerning in a direct line east, and that they have come upon a still richer deposit of ore, 75 fathoms from our boundary, and 105 fathoms east of our discovery. This also adds very materially to the value of our property relatively. At a point 70 fathoms east of Hall's shaft, I came upon the back of a strong lode, composed of quartz, iron, and gossan. I am sinking on it, and it will not be a matter of surprise if ore is found underlying the gossan. * * * Sept. 10: I have driven 3 fathoms west on the lode, with ore all the way. We may now consider it distinct from any other lode, and of great value to the property.

NEW ZEALAND KAPANGA (Gold).—J. Thomas, Aug. 25: In my last report I informed you of the peculiar and strong character of the ground then sinking through, and my opinion, stating we were evidently near a strong lode. A few days after posting this report we struck and sunk through a most promising lode, 3 ft. 6 in. wide, at a depth of 217 ft. from surface. It is found embedded in congealed soft strata, having two as regular and defined walls as could be seen, the powerful character of this lode, carrying such a body of metallic composition, has been the means of dislocating and disturbing the country considerably at the point of intersection, distinctly chopping through the stratified beds and floors of the formation, taking a sharper underlie than the usual dip of the strata, showing the strong decided character the new discovery presents. On the footwall side it carries a nice congealed description of flookan, 5 to 6 in. wide, mixed with loose, gritty, detached quartz; the hanging wall also carries a smaller flookan, size from 1 to 3 inches, which seems a tougher description, and is more fully charged with fine rich-looking black sandstone. Between these flookans the lode consists of a network of small branches, and crystallised vogue of quartzite disseminated throughout, being much mixed with carbonate of lime, and strongly charged with iron pyrites, presenting a most kindly appearance for carrying gold. Its general underlie is about 40° west, bearing about north and south; same in every respect as the main proved rich old Kapanga lode. From the point of intersection in the shaft to the surface the distance of underlie gives about 400 feet of backs of auriferous stuff to stop away. When the 300 ft. level is reached in the engine-shaft at this depth, a cross-cut driven west about 90 feet, will again cut this lode on its underlie, giving an additional 110 ft. of back, and laid open dry to the stop out for crushing, therefore the lode will be opened in two positions in the engine-shaft at the 217 ft. level, the point of intersection, and the 300 ft. level, which will command positions to lay open stopes for raising and crushing stuff for years. These points are more clearly explained by the accompanying transverse section enclosed.

I also send, per sample post, three small bags of samples broken from the lode—No. 1 taken from the flookan on the hanging wall, No. 2 the flookan and mineralised composition on the footwall, No. 3 sample of the centre lode. Two of these samples I have had assayed here, No. 1 yielding 1 oz. 12 dwts. 5 grs. gold per ton, and No. 2 7 dwts. 21 grs. of gold per ton. Assay certificate of above is enclosed, which I consider most satisfactory proof of the auriferous character of the lode, from samples broken out of the ends of the shaft, almost under water at the time. This important discovery being only made within the past fourteen days, little work could be done on it to this date. Since that time I have been making the necessary preparations to open on the lode at each end of the shaft, for stoping it away for crushing, and also preparing to erect the 25 heads of stamps for stamping at the earliest date. I shall endeavour to get 15 stamps of work first, which will reduce 150 tons per week to commence with, and which, estimating the general yield of the lode at ½ oz. per ton only, will produce a monthly return of 9000; when the lode is properly laid open for stoping crushing stuff can be broken to supply a greater number of stamps, as soon as they are erected. To give an idea of the quantity or quality of quartz this lode may produce would at present be almost impossible to estimate, as the company's sett extends on its course north and south 1200 ft., having a depth on its underlie of 2000 ft., all situate in new virgin ground; from its appearance, I am led to infer it is a larger and more general paying golds bearing reef than the old Kapanga lode. I cannot estimate the forthcoming value of this new hitherto unknown discovery, situated in this proved rich gold-bearing district; and I am of opinion before the shaft is sunk to the 100 ft. level other parallel rich reefs will still be found. This new lode of itself is sufficient value for all outlay yet incurred, if no other lodes existed in the sett, notwithstanding possessing two of the richest yet developed on this field. The ground in the bottom of the shaft is good for sinking, and has become more settled, and is still full of mineral of the usual description and class stone as before striking the new lode. The water in the old mine continues to drain away at the usual rate into the new engine-shaft, sinking old works being drained 74 feet below adit level. The machinery and pitwork are in first-class order, performing their work with every satisfaction.

TIN VESSELS.—In a paper addressed to the French Academy of Sciences Dr. Fordos gives the results of some experiments of his on tin vessels used in laboratories and hospitals, and even in private families, for infusions and similar purposes. These utensils generally contain lead in certain proportions, and it was, therefore, not inexpedient to learn how far that poisonous metal might be injurious to health in the long run. Dr. Fordos began by introducing water acidulated with 1 per cent. of acetic acid into a tin jug provided with a lid. After letting it stand for a few days, he observed on the inner surface of the vessel a slight white deposit, which was soluble in the acidulated water, and communicated to it the characteristics of a saturated solution: iodide of potassium yielding a yellow precipitate, sulphuric acid a white one, and sulphuretted hydrogen a black one. Nevertheless, the latter test is not reliable, since it causes a black precipitate with a salt of tin likewise dissolved in the liquid. The existence of a salt of lead in the white deposit is, however, sufficiently proved. It is confirmed in another way: if the inner sides of the vessel be rubbed with a piece of clean wet paper a solution of iodide of potassium will turn it yellow. In certain experiments a crystallised salt of lead was detected at the bottom of the jug. In other series of experiments wine and vinegar were tried; they both became charged with lead, as they dissolved the saturated salt deposited on the sides. Again, tartaric lemonade, left for 24 hours in the vessels, became impregnated with lead. Hence Dr. Fordos concludes that in alloys of tin and lead both metals are attacked, the latter being generally the first, when in contact with the atmosphere and acid liquids, such as wine, vinegar, lemonade, &c., and that consequently there may be serious danger in using such alloys, either in the shape of vessels or in tinning culinary utensils.

CARRYING COAL.—Mr. W. D. NAPIER, M.R.C.S., of George-street, Hanover-square, has patented some improvements in apparatus for the transport and delivery of coal. The inventor proposes to carry coal in boxes on wheels which are by preference filled in the mine. These boxes can be carried three or four together on a railway truck, and from thence they may be placed on a cart frame for delivery. The coal is unloaded by opening a trap-door in the box. The system is intended to save the time and labour expended in transferring the coal from the tubs into railway trucks, from the trucks into sacks, and from the sacks into the consumers' cellar.

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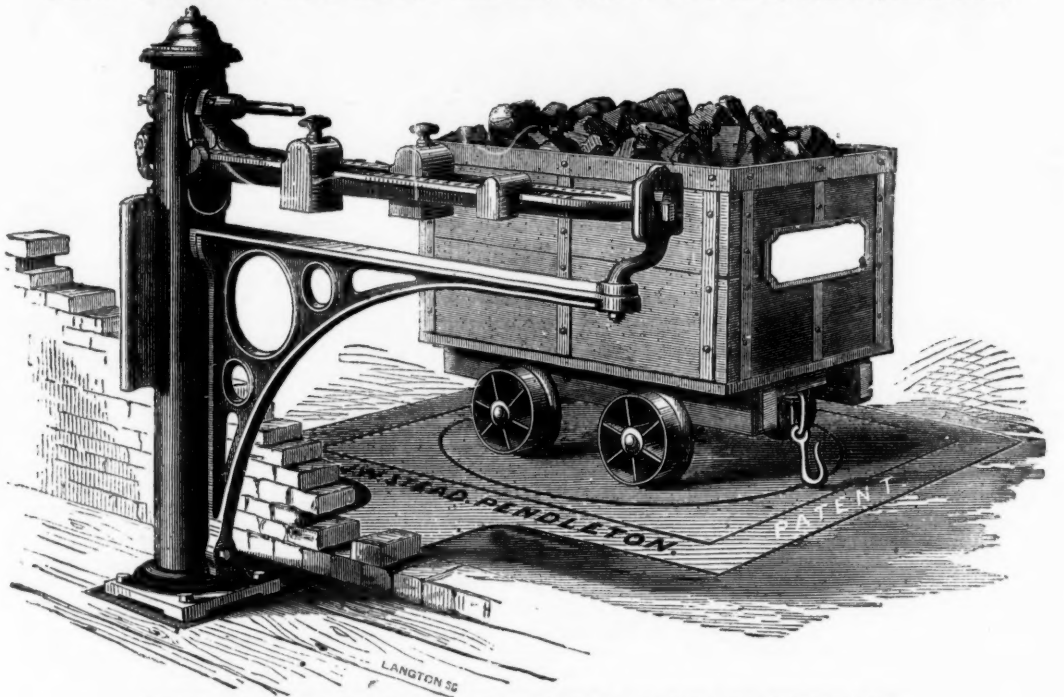
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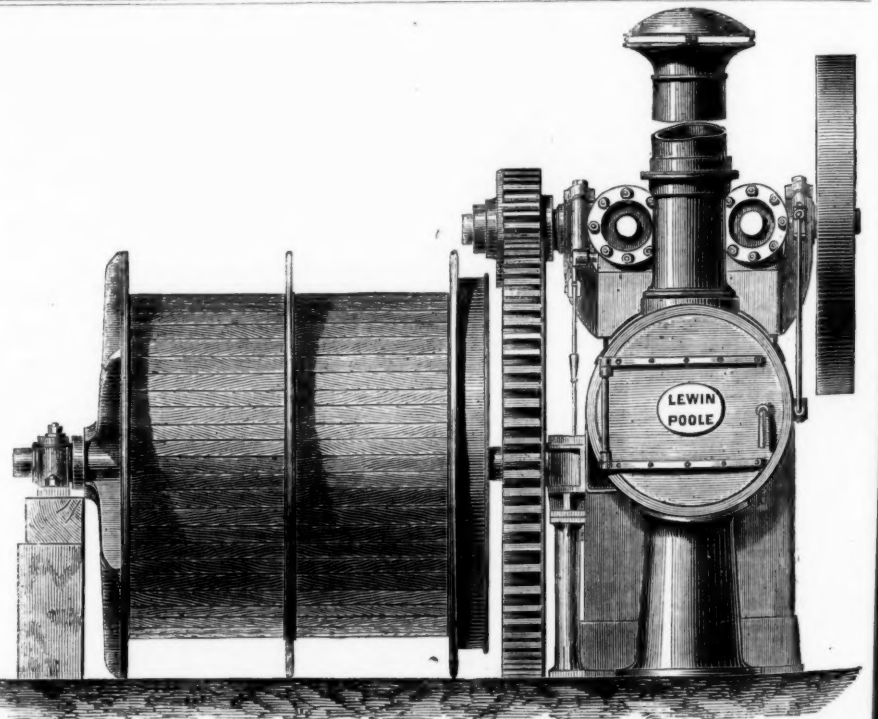
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on application.

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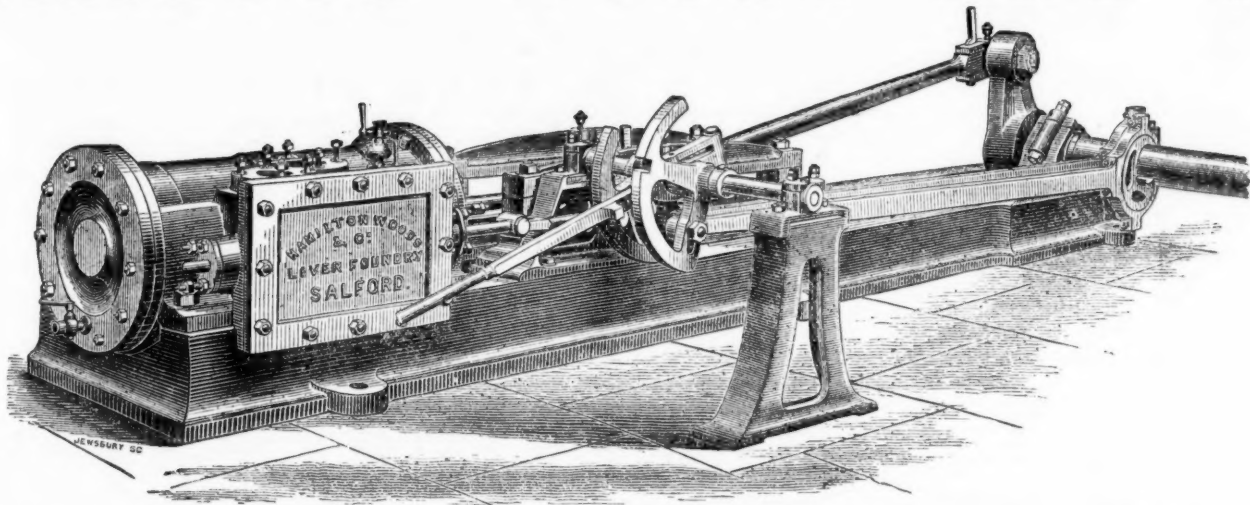
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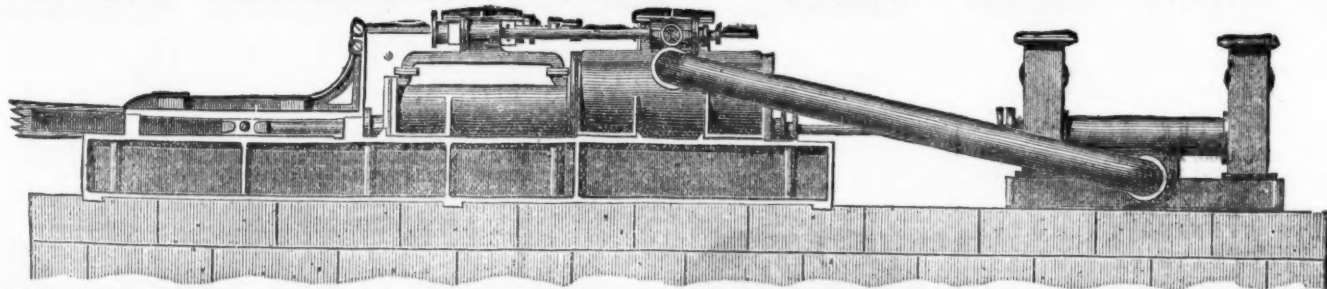
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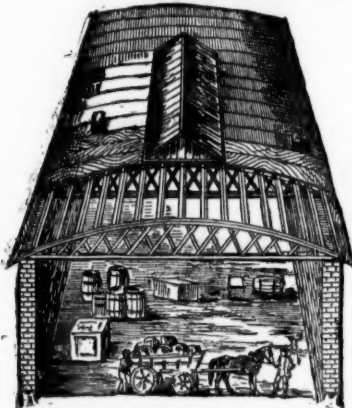
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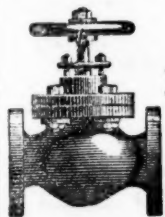
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